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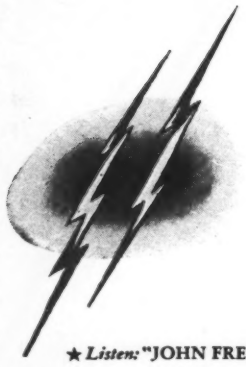

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GAS

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Nineteenth Year of Publication

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GUEST EDITORIAL

SERVICE

By ROY A. WEHE

Gas and Electric Engineer, California Railroad Commission

PUBLIC utilities are again writing a most creditable page in service—public service. This is not surprising to those in the industry nor to us who are in a position to see and know what our utilities are doing and what the public requires. The demands on the public utility companies are severe and exacting. While this is true in peace times, it is doubly true today.

The gas utilities in California, as in many other critical sections, have been and are being subjected to sharply increased service requirements. Such increased demands are being well met—and not by accident. Through this we witness the intelligent foresight and planning of yesterday in terms of service today. Thus it ever must be if a great industry is to maintain its place in the general order of things. While the future today may not appear too clear, yet for this very reason it is all the more necessary to keep closely attuned to the present and ever changing conditions in order that the industry may be better prepared to meet the demands which are to come.

This critical period has already imposed many unusual service demands on the gas industry. In California, for instance, we have witnessed the transfer of important production and transmission facilities to war uses outside of the industry where critical deficiencies in other fields have developed. This is adaptability and service of a high order and one of which the industry may well be proud.

There is no question but that we are experiencing basic and fundamental changes in our way of life. The gas industry, too, is facing and must meet these changing social and economic conditions. Already many of these changes are taking place. For instance, capital's share of production appears to be lessening. Irrespective of the permanency of this latter change, it appears that all wages above the bare necessities, whether of capital or labor, during the war period will be drafted for the common cause.

If, during this period, the gas industry can continue to meet the service demands imposed and at the same time maintain and make adequate provision for the replacement of its plant facilities, and not lose its perspective then it will not have done badly and, by so doing, it should emerge with a capability to meet the future. This is the time to lay the industry's plans to meet future ervice requirements. During this period, too, every effort should be put forth to maintain and improve its customer relations. If the industry will forget it has a "sellers" market when dealing with its customers, it will be doing much to establish itself more firmly with the public and at the same time will have anticipated probable future marketing conditions. In the reconstruction period, when the going will really be trying, a favorable public acceptance will be of great value.

While the same staunch characteristics of the gas industry will unquestionably enable it to cope with the many new problems of the future, it appears that in addition it will require greater flexibility and mobility of action. Greater competition will undoubtedly have to be met, not only as between other fuels, but also n order to maintain and secure the industry's portion of the consumer's dollar in relation to all his other wants.

These characteristics, coupled with simplicity and directness of action, should go a long way in enabling the industry to meet this competition and to maintain its place in the economic life of the nation. Likewise existing regulation must necessarily make corresponding adjustments and move forward if it is to continue as a constructive force and render the service the industry and the public have a right to demand. Regulation's ability to make these adjustments and the initiative and leadership it takes will in no small measure determine its place in the new order that is to come.

We have confidence in the ability of the gas industry to work out those problems that may be said to be primarily of the industry. It has also the opportunity to assist in working out the broader issues that will affect the industry and the public it serves. Will it accept this greater responsibility, this opportunity to assist in shaping the destny of private enterprise and this continued contribution toward an ever increasing standard of living through a better and more complete service?

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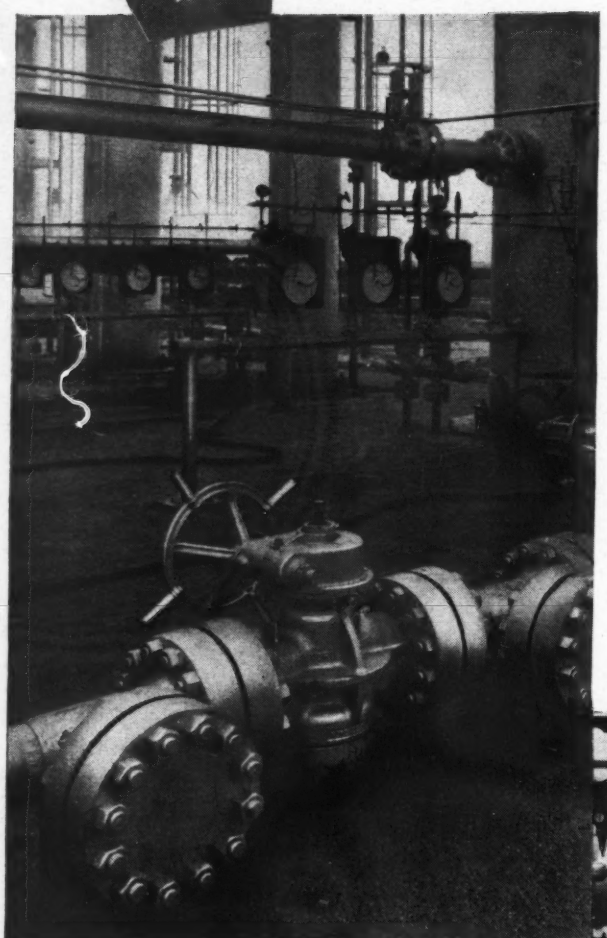

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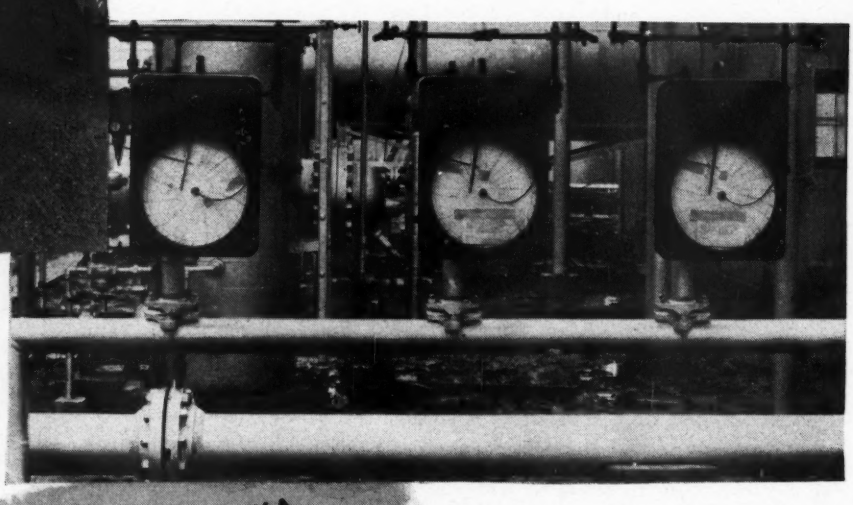

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THERMALLY THINKING

By ELLIOTT TAYLOR, Washington Editor

Rates and Rehabilitation

THE traditional stand of the gas industry press in matters of gas rates has often been based on the easy general assumption that rate increases were always justified, and that any attempt on the part of state regulatory bodies to lower them has been a dark political maneuver to be resisted to the last drop of printer's ink. As is usually the case in the setting up of any fallacious generality, there has been and continues to be just enough factual justification to give the premise a false air of truth.

Elliott Taylor

Often enough in the past, utilities have petitioned unsuccessfully for rate increases that should have been granted, or have instituted to no avail appeals against commission orders for unwarranted reductions. Regulatory bodies, on the other hand, have been known to cater to the popular approval that follows any decrease in immediate costs, with slight regard for the fine questions of either legality or justice that may have been involved.

Reductions Beneficial

Yet we have observed, over a period of years and in the main, that reductions whether instituted by the gas companies or by state bodies have been beneficial to the industry; and we are prone to believe that by far the majority of commissions have found sound justification for rate cuts before the orders have been issued. Reasoning thus, we have seldom if ever yielded to the temptation to damn regulation *per se*, or to ascribe other than legitimate motives to those who are charged with its enforcement. And we have kept our editorial peace even in the midst of the plaints of the bankers that revenue depletion of the utilities might endanger their rights to a share in the profits on every form of human endeavor.

We have touched briefly on our record in this respect merely to forestall any criticism that what we have here to say is just another professional bleat from the business press currying favor with its customers; it being characteristic of the traducers of the American principle of free enterprise that they never examine the validity of any criticism but confine their rebuttals to noisy denunciation of the motives of their critics.

In the interest of maintaining what is called Economic Stabilization, the OPA has injected itself as a new and formidable factor in the consideration of any new utility rate increases affecting, among other services, the retail price of gas to the consumer. Its position is legally supported by the Price Stabilization Act of last October under which the President is entitled to 30 days' notice to allow for the intervention of a designated federal agency before any rate-making body holding authority over utility rates. From a practical standpoint, OPA appears to be guiding its endeavors (in the Washington Gas Light case, the first to test its new powers) toward the goal of achieving a practical veto power over any proposed increases in gas rates on the grounds that they will be inflationary in tendency.

As a matter of fact, the government is not primarily concerned with the aspect of inflation that troubles the average citizen—namely, the rise in the cost of living. It is concerned, rather, with maintaining as nearly as possible the present purchasing power, in terms of goods and services, of the dollars that it is borrowing to finance the war. As the prime number one customer of all American industry it cannot afford to have the prices that it pays for the necessary materials of war follow, as they normally would, the rising spiral that the release of additional purchasing power inevitably presages.

OPA's contention that any rise in gas rates would contribute toward inflation should be examined in the light of at least two considerations both of which are interrelated in that they have a bearing on present as well as future economic trends. These considerations are: (1) Would higher utility rates increase or decrease the excess of consumer purchasing power that is competing on the market for a limited supply of consumer goods; and (2) How would such increases affect the postwar resumption of normal activities on the part of the natural gas industry and the public that it serves.

Obviously, any increase in gas rates would decrease by that much the amount of purchasing power available to buy other goods, at the moment. However, this argument might be said to apply to and justify unrestricted increases in the costs of any or all other commodities as well. There is this difference — that state regulations effectively limit the amount of return that utilities are permitted on their investment, or in other words on the profits that they can make.

Basis for Increases

In every instance any petition on the part of a gas company for rate increases under wartime conditions would be based on increased operating costs due to present-day abnormalities, and it is doubtful whether any increase granted would result in bringing net returns above normal. Certainly the possibility of excess profits would be so nominal as to be negligible.

This, coupled with the fact that all public utilities are limited by state regulations to a maximum return on investment, would effectively preclude any added earnings finding their way into the pockets of company stockholders. Wartime laws and orders have also stabilized wages and salaries to a large extent, so that this avenue for releasing new income can be considered closed.

It would then appear that any new sums that the public might be required to pay for gas service during the war would represent purchasing power frozen just as effectively as if it were immobilized in the form of enforced savings by each individual gas consumer. It is true that there might be some refunding of company bonded indebtedness, but such refunding would be toward the end of lowering interest rates (otherwise there would be no point in undertaking it) and would act as a factor tending to reduce the fixed charge items in future rate structures. Where short-term indebtedness to banks and

other financial institutions was liquidated, the tendency would be definitely a deflationary rather than an inflationary one. This because of the elementary fact, so often ignored by the banking fraternity, that every new loan made creates new money, whereas every loan repaid cancels out of existence an amount of money equal to the loan.

The Answers

Thus it follows that the answer to consideration (1) is that an increase in utility rates would tend to decrease the excess of present consumer purchasing power and would not have an inflationary tendency during the war period.

To find the answer to consideration (2) we must examine more closely the unique aspects of natural gas operations, wherein they differ from those of any other industry supplying services to the consuming public. In the first place, natural gas is an extractive industry, tending always to decrease the reserve supply of its only salable commodity. Due to its close relation to other petroleum products the gas supply appearing on the market cannot be arbitrarily curtailed to any appreciable extent or withheld to await more favorable retail prices. As oil and natural gasoline are in demand, so the supply of natural gas must fluctuate proportionately. Because of this fact a considerable portion of the normal gas transmitted from the fields is sold on dump load or interruptible contracts to large industrial users of heat. This is not a highly profitable load under any conditions, but it is justified by the fact that contracts are so drawn that deliveries can be interrupted on short notice and at any time that the more profitable domestic and commercial demands are able to absorb a greater proportion of the transmission line capacities.

Industrial users of gas under such contracts must be able to either shut down during periods of high commercial and domestic demand or switch on a few hours' notice to a standby fuel, which in many instances is oil. This arrangement works satisfactorily for all concerned during normal times, but war production puts a different complexion on the routine matter of interrupting the normal industrial gas supply. Since practically every industry operating today is either wholly or partially a war industry, shutting down of operations in the face of the insatiate demand for war materials cannot be considered. And since fuel oil is in a precariously limited supply in relation to the extraordinary demands of the military machine, it is only under extreme conditions that this normal standby can be utilized in lieu of gas. Certainly among those conditions cannot be considered the fact that there is a 90¢ per Mcf. market clamoring for the gas that is currently being sold for 15¢.

The financial structure of any natural gas company is based, among other things, on the amount of its estimated gas reserves, the probable life of the pool or pools from which its supplies are drawn, and the anticipated revenue to be received from the exploitation of the total available gas supply over a period of years. Brave money is often available for wildcatting. Smart money stays with the proven reserves.

The position of the natural gas industry after the war, then, will be one in which its known reserves will have been depleted and sold at a price disproportionate to the normal average price on which existing financial structures are based. The implications of this situation are more ramified than might appear at first glance. Physical properties of operating companies may be expected to be in a state of considerable disrepair, due to the shortage of maintenance materials during the emergency, and because of a lack of trained manpower under war conditions to keep equipment up to its maximum state of efficiency and in good condition.

Under these circumstances the need for immediate and large scale rehabilitation programs will be indicated, but the immediate undertaking of such programs will unavoidably be hampered by the fact that with the end of the war the gas load, and along with it the gross revenues of the gas industry, will plummet the day after the armistice is announced. Heavy industrial users of gas will need time to reconvert their operations to peace-time production; the retooling and redesigning of plants may require anywhere from 30 days to a year, during which time gas consumption for heat treating operations will be only nominal.

The consumer goods industries are looking forward with confidence to reentry into their normal markets, predicating their optimism on the back log of unfilled consumer demand that war limitations is already building up. This and the fact that their profits, while subject to excess profits taxes, are not limited by law, will mean that they will in the main have both the determination and the funds to go ahead with the necessary alterations and improvements to plants. In fact there may quite conceivably be a race to get there first with anything reasonably salable to get the first crack at the spending money that will be looking for a home.

But there can be no backlog of gas demand. By the very nature of the commodity it is either used when and as it is needed or it is not used at all. The gas shortage of today does not create a peak demand tomorrow, or whenever plenty of fuel is available. This then will be a critical time for the gas industry, a time when it will desperately need funds to get its plant back into efficient operating condition, and when both its current revenues and its borrowing position may be inadequate to cope with the pressing new demands of peace-time reconstruction.

Under normal conditions there are hundreds of plants, employing thousands of workmen who look upon the gas industry as their principal if not their sole customer. The resumption of normal activities by these concerns will also be dependent on the rate and volume of gas utility orders that are immediately forthcoming, or that can be seen in the immediate future. Such plants may be in a sound financial position due to war profits, or they may be caught spread out too thin on the basis of the unfilled orders that will be cancelled when hostilities cease. But in any event the tendency will be to hedge, to tighten up on operating expenses, to lay off wartime personnel until they see what new economic conditions and problems peace will bring.

Post-war Rehabilitation

It is true that in time even this condition would right itself, just as the depression of 1929-39 righted itself, when war preparation and war itself were introduced as prime factors in our national economy. But the time lag, during which the gas industry would have to seek the necessary funds for rehabilitation either through borrowing under unfavorable conditions or by the interminable process of instituting rate increase requests, would work to the detriment not only of the industry itself, but to its satellite purveyor industries and to the gas-consuming public.

If these observations are true, then in answer to our consideration (2) it must inevitably follow that present rate increases, where increased operating costs can be shown to justify such increases, and providing they are not taxed as current income, would have not an adverse but rather a highly desirable effect on the post-war resumption of normal activities of the gas industry, of the industries that are normally dependent on that industry, and on the public whose convenience and necessity the gas utilities serve.

We believe that this is a subject and a viewpoint that would not be favorably entertained by OPA in its present harassed and volatile state of mind; but we do recommend it for the consideration of FPC and of the various state and municipal regulatory bodies within whose jurisdiction it would fall.

GAS at WAR

Washington Notes

Gas, Electric Water, and Steam Utilities, Materials (U-1): The office of War Utilities, recently created within the War Production Board to administer war activities of electric, gas, water, steam, and communications utilities, Feb. 24 issued its first basic order.

The order U-1 replaces the former P-46 and all amendments and supplements thereto, re-enacting most of the P-46 provisions. It governs the flow of materials into the entire utilities field with the exception of communications, and is the first industry order to be integrated with the Controlled Materials Plan.

An important group of provisions within the order, designed to effect sharing of material and equipment in utility inventories, requires utilities to sell surplus stocks as a condition for continuing to receive priorities assistance. These provisions are linked with the creation of regional surplus stock offices, to be in operation throughout the United States this month, through which utilities will carry on the redistribution of their surplus materials and equipment.

The order authorizes the use of a higher rating, AA-1, and a Controlled Materials Plan allotment symbol, to permit utilities to obtain materials for maintenance, repair and minor construction. The order also, for the first time, brings under inventory regulation stocks of controlled material held by utilities for use in construction. It requires utilities to limit such holdings to their needs for the ensuing 60 days.

A sharp reduction in the inventory which may be held for maintenance and repair after March 31, 1943, is made in the new order.

Supplementary Utilities Order U-1-a. Notwithstanding the provisions of Utilities Order U-1, service connections may be made to facilities of the army or navy of the United States or the Maritime Commission upon the direct order of the army, navy or Maritime Commission: *Provided,* That the total length of the main extension or the service line does not exceed 250 ft. and the total cost of materials required for the extension does not exceed $1500 in the case of underground construction and $500 in the case of other jobs.

Supplementary Utilities Order U-1-b. Notwithstanding the provisions of Utilities Order U-1, gas and electric service connections may be made by producers to permit the operation of a gas or electric range in the dwelling of a domestic consumer; *Provided,* That:

(a) Complete facilities are not installed for serving either a gas range or an electric range.

(b) The dwelling proposed for connection is not equipped with a range of any kind; and

(c) Connections (including any additional service drop, primary, secondary, and ground conductor, but excluding service entrance conductor and interior wiring) can be made with an expenditure by the producer of not more than the following amounts of material:

(i) In the case of an electric range, 15 lb. of copper, or

(ii) In the case of a gas range, 75 ft. of 1¼-in. steel pipe, or any length of steel pipe weighing in the aggregate not more than 170 lb.

Supplementary Utilities Order U-1-c. Notwithstanding the provisions of Utilities Order U-1, electric service connections may be made under specified conditions to permit the operation of certain farm production equipment.

Utility Rates: An increase in utility rates, even though made as the result of automatic adjustment clauses based on increased taxes, fuel costs and similar items, cannot be made without prior notice to the Office of Price Administration, OPA ruled Feb. 10.

In a formal interpretation, OPA held that such rate increases come within the provisions of the Emergency Price Control Act as amended and OPA Procedural Regulation No. 11 even though the automatic adjustment provision in the utility company's contact may have been made before the price control acts were enacted.

The act provides that no public utility shall make any general increase in its rates or charges which were in effect Sept. 15, 1942, unless it first gives 30 days notice to the President or such agency as he may designate. The Office of Price Administration has been designated as that agency by the director of economic stabilization. The utility must also consent in these cases to the intervention by OPA before the regulatory agency having jurisdiction over the rates.

Tin in Gas Meters Restricted: WPB Preference Order M-43-b (Part 1001.3) restricts the use of tin in certain gas meters. After Feb. 15, 1943, notwithstanding the provisions of any state statute or governmental regulation, no person shall use tin-bearing solder or other tin-bearing material in the adjustment, internal repair or resealing of any tin-cased gas meter having a rated capacity of less than 300 cu. ft. per hour except:

1. A meter which is found not to be accurate within an accuracy range of plus or minus 4% when tested by standard meter prover tests; or
2. A meter which has not been previously repaired internally for 12 years or more.

The restrictions do not apply to any such gas meter which was withdrawn prior to Jan. 26, 1943, for the purpose of testing and returning it to service.

Safety Valves (L-134): Because a limitation order setting standards for safety valves is now being worked out, all reference to such valves has been deleted from Limitation Order No. L-134, which curtails the use of various metals in the broader category of controlled valves and regulators.

The administration of L-134 was recently transferred from the General Industrial Equipment Division to the Radio Division. The manufacture of safety valves, however, will be supervised by the Shipbuilding Division.

Although manufacturers of safety valves are relieved of obligations created by L-134, WPB officials pointed out that their contracts generally were placed when the order was in effect and that they, therefore, conform to the standards set under it.

Cooking and Heating Stoves (OPA-T-573): Simplification of the procedure for setting ceiling prices at wholesale and retail on new models of domestic cooking and heating stoves was provided by the Office of Price Administration Feb. 11 with the establishment of a method by which OPA may set both wholesale and retail ceilings at the same time that it establishes the manufacturer's maximum price.

This provision is formally set out in Amendment No. 4 to Revised Price Regulation No. 64 — Domestic and Heating Stoves—and became effective Feb. 16.

Plumbing and Heating Tanks (L-199): Interpretation No. 1 states that underfired storage water heaters containing tanks made of the metals specified may be installed if the heaters were assembled prior to Dec. 19. The

A "Minute Man Flag" with special "T" insignia, signifying that over 90% of company employees are participating in war bond buying to the extent of 10% or more of the gross payroll was raised on the roof of the Southern California Gas Co. building on Flower Street in Los Angeles following a system-wide bond buying drive recently put on by employees. Seen in the center of the picture holding the flag with his right hand is Frank Weiss, chairman of the drive. In front of him is R. F. Ogborn, who led the drive in the company's central division. Others present were captains in various departments of the company.

manufacture of such water heaters is covered by L-185 and that order does not prohibit the installation of heaters already assembled on Dec. 19, 1942.

Low Pressure Cast Iron Boilers (L-187): To permit manufacture of such boilers for war housing and civilian replacement, manufacturers are authorized under the amended order to use iron and steel in each of the first two calendar quarters of 1943 in an amount equal to 4.5% of the metal which they put into process in the manufacture of component parts of boilers during the calendar year 1940. Restrictions on shipments do not apply in manufacturers' inventories prior to Jan. 1, 1943. Repair parts production for military and hospital boilers is unrestricted.

■ ■

Successful Bond Drive

Led by some 800 "Ten Percenters" who were already subscribing 10% or more of their monthly pay checks to the purchase of war savings bonds under a company voluntary payroll deduction plan, employees of the Southern California Gas Co. late in December launched a system-wide bond buying drive which in less than two months brought about nearly 100% participation in the plan. In five of the company's divisions, participation now stands at 100% and in a sixth it misses the top mark by only four-tenths of one per cent. Participation throughout the company as a whole, according to the latest compilation, has reached 96.3%, and employees are subscribing 10.03% of the gross payroll. At the beginning of the drive, the system "score" stood at 62.8% with 4% of the gross payroll being subscribed.

Frank Weiss, assistant to the vice president in charge of sales and manager of the natural gas bureau, headed up the drive as chairman of the "Ten Percenters." He was assisted by Don Wheaton, former sales supervisor, who is now in the company's general agents department. Chairmen, selected from "Ten Percenters" in each division, put on the divisional drives, which developed into spirited contests between divisions. First to go over the top was the Newhall division, where by the end of the second day of the drive 100% of the employees were participating in the plan. S. S. Donaldson, division manager, led the drive there.

Northern division, one of the largest in the system, took second place with a perfect score of 100% reached on the third day of the drive. Frank J. Murray, manager of the Burbank district, was chairman in this division.

Fuel Conservation

Two information circulars have recently been issued by the U. S. Bureau of Mines advising how to conserve fuel for household heating, I. C. 7220, "Home Insulation With Mineral Products—Conservation of Fuel for War," dated September, 1942, and I. C. 7229, "How to Save Fuel at Home," dated November, 1942. Both of these circulars can be obtained free by writing to the Bureau of Mines, Department of Interior, Washington, D. C. The former goes into some detail of types, application and performance of house insulating materials; and the latter reviews maintenance of heating equipment, relative efficiencies of various fuels, various ways in which heat losses occur from buildings, and percentage savings in fuel resulting from various degrees of completeness of insulation. Table of over-all efficiencies follows:

OVER-ALL EFFICIENCIES

(Solid fuels listed are hand-fired)

	High	*Low*
Anthracite	70	50
Bituminous, Sub-bituminous	65	40
Lignite	53	40
Coke	70	50
Oil	75	50
Gas	80	55

■ ■

Truck Repair

The Office of Defense Transportation Feb. 26 made available two reports on truck motor repair methods prepared by the Society of Automotive Engineers at the request of ODT. The reports are the third and fourth in a series of more than 25 which SAE committees are preparing on the general subjects of automotive maintenance in order to assist firms handicapped by the shortage of mechanics.

The two reports cover proper methods of reconditioning cast-in-block engines and techniques for engine bearing replacement. These, and two previous reports on metal casting and on fitting pistons to reconditioned cylinders, may be obtained without charge from the Vehicle Maintenance Section, Motor Transport Division, ODT.

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Plant Protection Facts

A Plant Protection Fact Sheet containing the highlights of a booklet entitled "Passive Protection for Industrial Plants" has been issued by the U. S. Office of Civilian Defense. The booklet and fact sheet are in accordance with the wishes of OCD Director James M. Landis, who declared: "The growing demands of our armed forces make it absolutely essential that all plants in America take affirmative steps to protect themselves from the effect of any enemy action."

COMBUSTION SAFEGUARDS

In the Utilization of Gaseous Fuels

By THEODORE A. COHEN

Chief Engineer, Wheelco Instruments Co., Chicago, Illinois

MARKED advances in development of equipment to eliminate explosion hazards have been made in recent years, extending application of modern combustion safeguard instruments to all types of direct-fired boilers, industrial furnaces and ovens.

Elimination of explosion hazards is gaining increased attention as management seeks every means of protecting and extending life of equipment now installed. An explosion may involve injury or death to employees, as well as physical damage to equipment, breakdown in production, and disablement of other parts of the plant and equipment by fire resulting from the explosion.

Adaptability of combustion safety equipment to smaller heating plants such as are installed in theaters, office and apartment buildings, and processing kettles, often is not recognized by the customer, leaving the gas engineer as a logical contact between the user of gas-fired equipment and the manufacturer.

There has, in the past, been some opposition to a combustion safety device, as a few users of early equipment felt it might cause more trouble than it prevented. This criticism of early-day combustion safeguards is no longer valid, as manufacturers have since concentrated on research and design to produce equipment of unquestioned reliability.

The speedup of production in many industries occasioned by the war program has often transferred to relatively new hands responsibilities for tending equipment in which explosion hazards exist. To offset this greater danger, as well as to provide permanent protection against loss of life and shutdown of plant due to human failure, combustion safety equipment is being relied upon more and more to remove the explosion hazard.

Present-day combustion safety equipment has proved more trustworthy than the human operator in preventing explosions under unexpected circumstances in applications ranging from small industrial ovens to the largest boiler furnaces in existence. They provide protection at very low cost—a very small fraction of the cost of equipment and plant given protection.

Explosions in Starting: The greatest number of explosions in boilers, industrial furnaces and ovens is in starting. Fuel may leak past valves in the fuel line, to accumulate in the combustion chamber of an oven or furnace where an explosion may result on insertion of the lighting torch or ignition of the pilot burner. This explosion cause is not limited to gas. Unburned fuel, in the case of oil and pulverized coal, may accumulate in the combustion chamber, and the gas distilled from it, upon mixing with air, may produce an explosive mixture that can be ignited during the lighting procedure.

Ignition may be accidentally lost with decrease in fuel feed, or lost with stoppage of fuel, and then fuel feed resumed without repeating the proper lighting cycle. A part of the furnace may maintain sufficient heat for a short time to ignite the re-established fuel and provide an explosion.

A third explosion cause is a decrease in air supply to an extent where unburned fuel may accumulate in furnace or flues and ignite when proper fuel-air ration is restored, or if the unburned fuel condition is changed to a condition of slightly abnormal excess air. This occurs more readily with oil than with gas. Raw fuel entering the combustion chamber may not be completely consumed, due to insufficient oxygen brought about by air supply fan failure or some other cause. The fuel accumulates in some portion of the combustion chamber, and when the air supply is re-established, the gas in the pocket is diluted to present an explosive mixture.

Prevention of Explosions: It is apparent on analysis of the above explosion hazards that explosions cannot occur:

1. If the furnace or oven has been purged of all fuel or hazardous vapors;

2. If, after purging, an ample igniting flame from pilot or torch is properly applied to each burner before fuel is turned on;

3. If air velocity at each burner is kept sufficiently low to prevent loss of ignition in starting;

4. If fuel is sufficiently rich to insure immediate ignition from torch, and

5. If, after ignition is established, proper mixture of fuel and air is maintained throughout the entire furnace operation, and stable ignition is maintained at all operation rates.

Similarly, after starting, explosions cannot occur:

1. If stable ignition has been attained;

2. If a flame failure at burner causes an instantaneous shutdown of fuel supply;

3. If a power failure to burner equipment causes an immediate shutdown in fuel supply, and

4. If a reduction or failure in air or fuel supply causes an immediate shutdown in fuel supply control means.

Purging is Important: Proper consideration of all factors contributing to combustion explosions, both on starting a furnace or oven and after starting, point to the necessity of thorough purging of the combustion chamber before lighting, and to the importance of adequate flame failure safety protection equipment.

Purging is necessary not only where gaseous fuels are used, but also with oil and pulverized coal burning equipment. Oil or pulverized coal entering a furnace that is hot, but below the ignition temperature, may introduce a hazard by distilling gas which, upon mixing with air, may ignite from hot refractories. There is a wider range of explosive limits where a hot furnace is slightly below the ignition temperature of the fuel, and, if the fuel reaches a hot spot, a major explosion may occur with either a leaner or a richer mixture than would explode in a cold furnace when first lighting off.

Purging is usually accomplished by an air flow switch in combination with

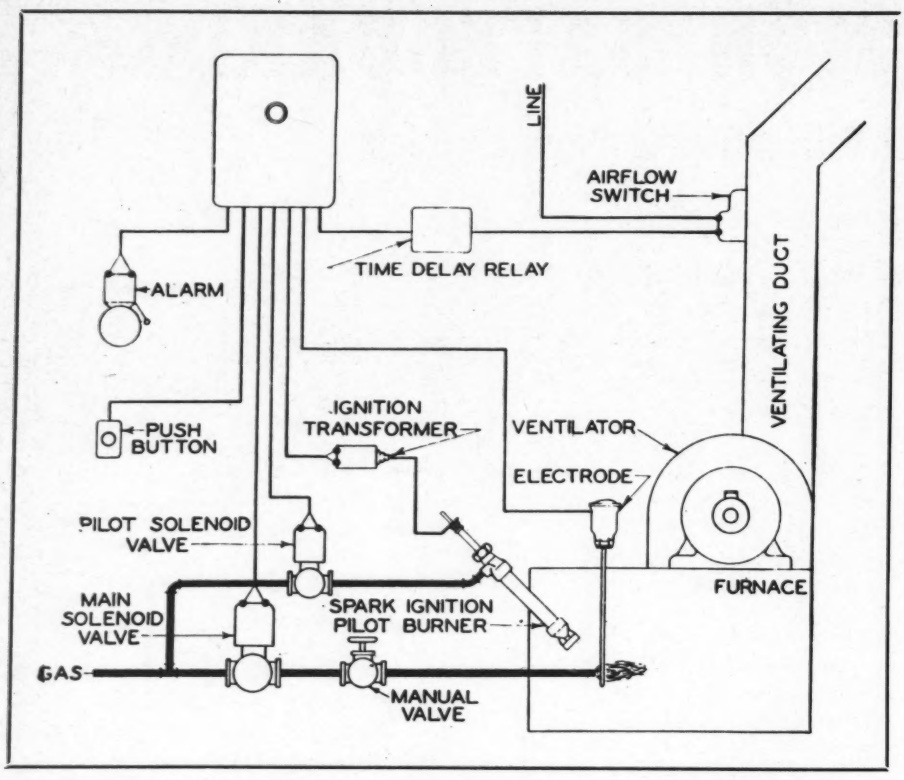

FIG. 1. Illustrated is a hookup with provision made for controlled purging of the combustion chamber. No ignition attempts can be made until the air flow switch and the time delay relay indicate the combustion chamber has been purged of all combustible vapor. When purging is completed, the instrument opens the solenoid pilot valve and turns on the ignition spark. The gas from the pilot burner is ignited by the spark and the circuit is completed when the pilot flame comes in contact with the electrode. The main solenoid valve is then opened, allowing fuel flow through the manual control valve to the main burner, where the gas is ignited by the pilot flame. After a fixed time cycle, the spark ignition and the pilot burner are shut off. If for any reason the pilot burner does not light, or if the main burner fails to ignite from the pilot, the instrument immediately shuts off pilot and main fuel valves and sounds the alarm. A flame failure during operation also shuts down the burners instantly and, after a purging period determined by the instrument and set in accordance to the need of the equipment protected, causes a relight cycle.

a time delay relay that together supervise operation of a ventilating fan. The fan may be of an exhaust type, pulling the atmosphere from the furnace for replacement with fresh air, or may blow in fresh air to dilute and eventually force out all gases that might have accumulated in the chamber.

The Combustion Safeguard: Two responsibilities are placed upon a flame-failure safety device. It must cut off the fuel supply to a burner in case of flame failure or loss of ignition, and must provide the cutoff quickly to prevent raw fuel from entering the combustion chamber after the flame failure has occurred.

Early flame-failure devices fall into two general classes, both making use of heat radiated from the flame. One type of thermometric bulb with an expansible liquid. This member is exposed to the source of heat, and in turn operates an electric contact to energize the fuel supply valve, or it might act directly upon such a valve to maintain the fuel flow to the burner as long as heat is radiated from the flame to the thermally sensitive portion of the apparatus.

Another type employs a thermocouple, essentially two dissimilar metals welded together to form a junction which, upon being heated, produces an electric current flow in a low resistance magnetic valve. The valve is manually opened and maintained open while the thermo-junction is heated by radiation from the burner flame.

Objections to these early devices were on the ground that flame failure must allow the thermally sensitive members to cool if the fuel control valves were to be closed and the fuel supply to the burner cut off. In their operation, however, sources of heat other than the flame sometimes impinged upon the thermally sensitive members and maintained the fuel supply valves open for a considerable length of time after flame failure. Radiant insulation in the combustion chamber, burning fuel that may have dripped upon the surface of the burner mounting wall, hot ceramic tips of the burner, and other factors cause such extraneous heat and reacted unfavorably upon the instrument.

Flame as a Conductor of Electricity: To overcome these objections, the lesser known ability of a flame to conduct an electric current has been employed in a modern combustion safeguard instrument. An electrode is introduced into the flame and connected to the instrument. As a conductor

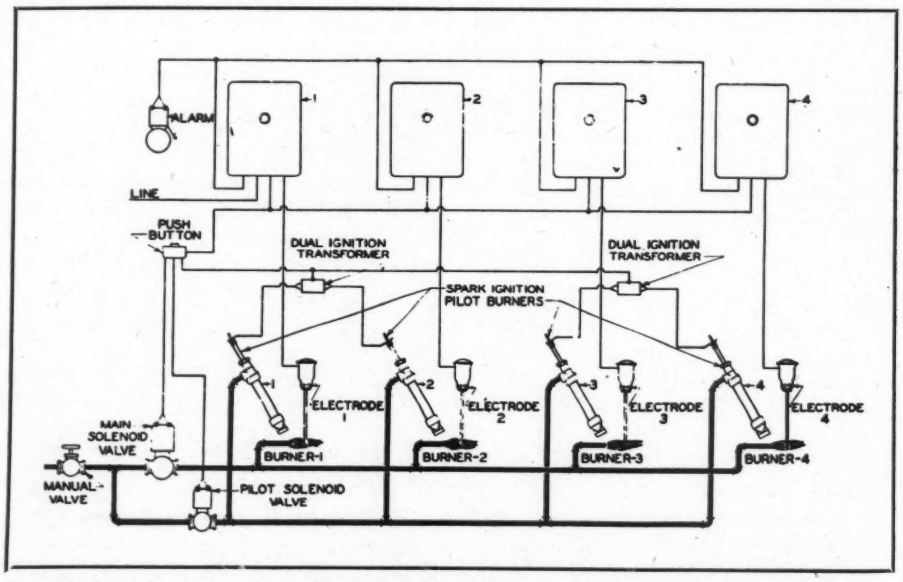

FIG. 2. It is unsafe to ignite one burner from the burner adjacent, especially with large capacity burners. This makes advisable use of safety equipment for guarding individual burners against flame failure. The diagram shows how a multiple-burner gas-fired oven or furnace may be equipped with combustion safeguards. Depression of the push button opens the pilot valve and energizes all spark ignition pilot burners through ignition transformers. When the pilot flames touch the flame electrodes, the instruments open the main solenoid valve and the main burners are ignited by the pilot burners. Upon flame failure at any of the burners, the main valve and pilot valve both close and the alarm bell rings.

of electricity, the flame has a definite range of resistance, readily distinguished from that of any other medium. The instrument reacts in accordance to the amount of resistance in its electrical circuit, of which the flame is a part. The resistance in the circuit remains within certain constant limits as long as a flame is in contact with the electrode, and the instrument holds open valves in the burner fuel line and maintains combustion. Flame failure, however, increases the resistance in the circuit, and the instrument instantly closes the fuel valves to prevent flow of fuel to an unignited burner. When a burner is being ignited, a pilot light, also in the circuit and in contact with the electrode, provides the necessary resistance in the circuit to enable the instrument to open fuel lines to the burner.

For use with fuels other than gas, and which burn with luminous flames, a device incorporating a photo-electric cell is employed in place of the electrode.

Protection Extended to Instrument Failure: Modern combustion safeguard instruments, after shutting both main and pilot valves upon flame failure, provide a time delay for purging the chamber of combustible gases before lighting is permitted. They are designed for all applications where combustible gases might be present, and purging time is usually fixed at the factory to prevent tampering after the instruments have been installed.

An assurance against explosions resulting from failure of any part of a modern combustion safeguard instrument or a short in the circuit is provided, as the device then closes fuel valves as it does in case of flame failure. In this manner, the safeguard protects not only against human failure, but also against any deficiencies that might develop in the combustion protective equipment itself.

■ ■

Balanced Gas Production Suggested for Hugoton

Establishment of potentials and prorated production from the Guymon secto. of the Hugoton gas field was proposed last month by Earl Foster, conservation attorney for the Oklahoma City corporation commission. Drafts of Mr. Foster's proposal were distributed to interested operators.

If accepted, the order will create an acreage unit of not more than 640 acres, all in one section. Deliverability of a well would be based on 80% of the average field pressure. A system of tests and potentials worked out by the conservation department would determine such deliverability.

Over- or underproduction would be balanced monthly, with the probability that an overproduced well would be shut in at the end of a year until the average is fully made up.

FIG. 1. Radiators installed for engine jacket water cooling.

Radiator Cooling Horizontal Twin-Tandem Gas Engines

THE El Paso Natural Gas Co. has recently equipped one of its compressor stations with a Happy Co. radiator cooling system for both its engine and gas cooling requirements. This station consists of six 800-hp., twin-tandem Cooper-Bessemer Type 19 horizontal gas engine driven compressors, and prior to the installation of this radiator method of cooling, used an average of from 60,000 to 70,000 gal. of treated water per day and during the windy spring months used as high as 100,000 gal. per day.

The scarcity of water in this area necessitated either the construction of a 40-mile water pipe line or a different method of accomplishing the cooling. The installation of the radiator system was made after exhaustive tests on one of the 800-hp. units at this station. This initial test equipment consisted of two large 8 ft. by 8 ft. vertical radiator sections, each being equipped with 93-in. variable pitch fans, V-belt driven by a small gas engine. The piping to the radiators was so arranged that the radiators could be used either in parallel or in series, which gave the flexibility required for the test. During such tests, data were accumulated to determine the most desirable engine operating temperatures from a standpoint of engine maintenance as well as operating costs on the radiator equipment. The maximum jacket water inlet temperature was found to be 140° F., with an outlet temperature of 150° F., and 140° F. engine inlet temperature produced a temperature of approximately 160° F. on the water-cooled power piston rod outlet; all such temperatures being with an air temperature of 100° F.

The engine on which the tests were being run was kept fully loaded at all times and gave no indication of any mechanical troubles by reason of the higher jacket temperatures. However, the water circulation rate was doubled in order to obtan the desired temperature differences.

One of the numerous difficulties encountered in cooling this type of engine was the splashing of water into the lubricating oil from the water-cooled piston and rod. It was a simple matter to completely close the water circulation through the jackets, but with the additional quantity of water flowing through the rod, the problem was somewhat more difficult. The built-in drains of the engine were insufficient to adequately carry the cooling water away, thus causing an accumulation of water in the bearing lubricating oil. This problem was solved after sufficient test data had been accumulated to determine the practicability of the use of radiators.

From the original tests, the conclusion was drawn that if the above mentioned temperatures were not exceeded, the engine performance would not be affected as far as ring and packing clearances were concerned, and also it was not considered necessary to change the characteristics of the cylinder lubricant heretofore used.

Based on the test data accumulated, a total of 11 radiators of the size and capacity as above were selected and installed for the engine jacket water cooling. See Fig. 1. The fans for such radiators were directly connected to constant speed electric motors; the flexibility required being obtained from the vari-

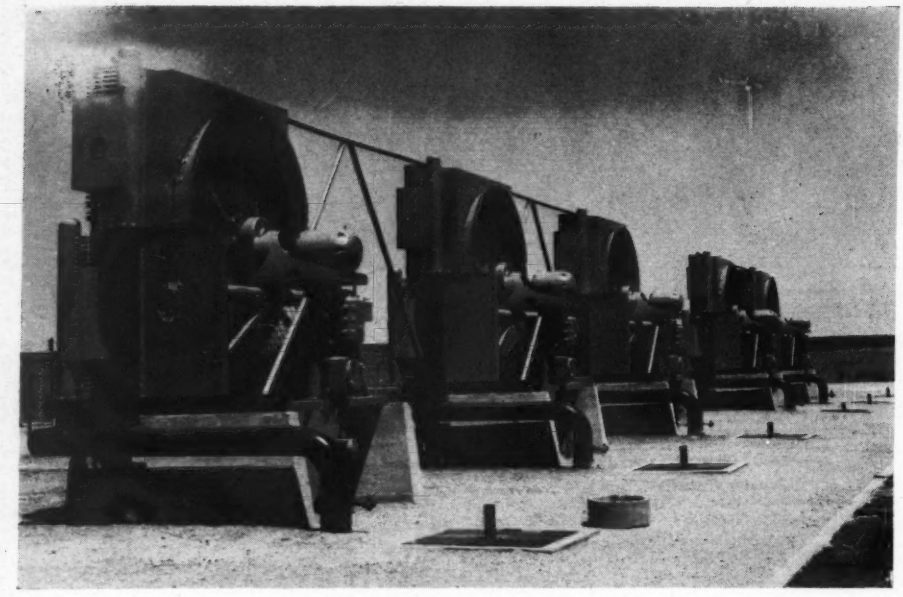

FIG. 2. Five gas radiators installed in parallel designed to cool the gas after compression under maximum load conditions.

able pitch of the fan blades rather than from variable speed motors. Such radiators were connected in parallel and designed to receive water during maximum conditions at 153° F. inlet temperature and 140° F. outlet temperature. Three circulating water pumps were connected so as to receive their suction from the radiator battery and pump directly to the engines and from there back to the radiators. The engine rod water drains from the engine at atmospheric pressure to a separate header and is pumped from there by one low head pump directly to the inlet of the water head serving the radiator battery. Since this arrangement is a dual system, the operation necessitated a float valve assembly so arranged that the two pump systems can be balanced without undue manipulation.

In addition to cooling the engine jacket water, it was necessary to run tests and select equipment suitable for cooling the gas after compression. In the past such was accomplished by shell and tube heat exchangers, using the engine jacket water as a cooling medium. In using radiator cooling, it was found to be impossible to obtain proper gas cooling due to the increased outlet temperature of the engine jacket water. Tests were first run in an effort to use the shell and tube heat exchangers in connection wtih water radiators; the method used being to increase the amount of water circulation through the shell and tube exchangers to sufficiently lower the gas temperature, but such method was unsatisfactory due to the low efficiency in cooling water through the radiators by means of air, and it was finally decided to use direct air to gas exchangers. This equipment is in effect a gas radiator using small bronze tubes finned as cooling surfaces and being of sufficient strength to operate at 500 lb. psi. Five such gas radiators were selected and installed in parallel between the compressor transfer header and the main discharge header as shown in Fig. 2. These radiators were designed to cool the gas, after compression under maximum load conditions, to a temperature not to exceed 10° F. above atmospheric temperature and the pressure drop of the gas through the radiators not to exceed 7 lb. psi.

The installation of such equipment was completed during the first part of March, 1942, and the station has been operating satisfactorily since, although maximum load conditions have not as yet occurred and at the time of writing it is thought that it will be necessary to install one additional gas cooling unit.

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Louisiana Butadiene Plant Now in Operation

With a rated capacity of 6600 to 9000 tons, the first of the butadiene plants which are to produce raw material from petroleum for the government's synthetic rubber program began operation on Jan. 29 at Baton Rouge, La., according to a report issued by the Standard Oil Co. (New Jersey).

The estimated output of butadiene from the plant will be sufficient to produce rubber for 1,300,000 to 2,000,000 tires.

The Standard Oil Co. had originally scheduled completion of this plant for Oct. 1, 1942, when it was to serve only the company's synthetic rubber needs. Lack of critical materials held up completion, and just prior to Pearl Harbor the Rubber Reserve Co. contracted with Standard of Louisiana for the entire output of this plant to assist in speeding up the government's synthetic rubber program.

Three additional butadiene units at Baton Rouge, wholly or partly financed by the government, are nearing completion.

Discovery of New Oil Fields Declines Sharply in 1942

AMOUNT of crude oil discovered in the United States during the whole of last year totaled only 801,000,000 bbl., or about 57% of the 1,400,000,000 bbl. actually consumed, according to figures just released by the PAW. And this, commented Administrator Harold L. Ickes, is "a liberal and optimistic estimate of what might be expected on the most favorable probable basis."

Said Deputy Administrator Ralph K. Davies: "We have been drawing on our accumulated capital to meet our current expenses."

Realizing early in 1942 that the wartime shortage of steel would have a serious effect on the number of wells drilled, the government urged the petroleum industry to stress wildcatting in an effort to locate new fields. As a result, while the total wells drilled last year decreased 40% from 1941, the number of wildcats declined but 7%. However, only two out of every twenty-three wildcats brought in new fields, as compared to two out of nineteen the preceding year.

Result of petroleum activities in 1942 showed that the only dependable sources of large quantities of oil remained in areas distant enough from the East Coast to involve difficult transportation problems.

This is the first time a Federal agency has made a survey of all the new oil fields located during a calendar year, and the investigation revealed a total of 261 new fields discovered, as well as 74 new producing horizons in old fields.

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Northern Natural Gas Announces New Rate Scale

A new schedule, reducing by $2,087,000 a year its wholesale rates to distributing companies in Nebraska, Iowa, South Dakota, Minnesota and Illinois have been announced by the Northern Natural Gas company of Omaha.

The reductions are to be reflected in all bills for gas deliveries, subsequent to Feb. 1. The distributing firms, affected by the reduction, serve 390,000 customers in 180 communities, including Minneapolis, Des Moines, Sioux City, Fort Dodge, Lincoln and Omaha.

Whether retail consumers will share in the reductions depends on action by community or state regulating authorities, officials of the federal power commission said. The new schedule was reached by agreement between Northern Natural Gas Co. and the FPC after a series of conferences.

The new schedule will result in a 15% cut in the company's revenues from sale to the distributing companies, based on its 1941 sales.

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Bowerbank Production Up

Discovered only last year, the Bowerbank gas field near the Buttonwillow area in California is providing additional natural gas with necessity for little pipeline construction. The Texas Co.'s S.P. 47-15, the discovery well, was originally drilled in 1941 to a depth of over 12,000 ft. in search of oil, then plugged back to 6607 ft. and operations suspended.

During the last year, however, it was cleaned out to 4271 ft. and again plugged. Perforations were made, and 2½-in. tubing set with packer at 4171 ft. Estimated production of gas is now 11,000,000 cu. ft. daily. Luckily, the well happens to be adjacent to existing gas transmission systems.

SYMPOSIUM ON GAS GENERATORS

1. Design of Sprays and Burners

By R. A. HANSON

Pacific Gas & Electric Company, San Francisco

R. A. HANSON, Pacific Gas & Electric Co., San Francisco. Topic: "Design, Installation and Capacity of Burners." Presented before the Production Conference of the Pacific Coast Gas Association.

AFTER most of the important problems of making high Btu. gas had been solved and we were able to produce our rated capacity of the generators and operate continuously, we were still using the same sprays and burners we had used in the manufacture of low Btu. gas, that is, the flattened pipe spray with the steam injectors for both make sprays and heat burners.

Although the machines were producing what we considered their capacity, we were not entirely satisfied for two reasons:

1. The generators did not "clear" as quickly as we desired, which, aside from lack of efficiency, delayed the heating somewhat and also created a nuisance to adjacent establishments because of the excess smoke and lighting of the gas when the stack valve was opened. We considered the reason for this to be largely due to the syphoning of the injector type of make sprays after the make oil was shut off.

2. We found lamp black and light oils in the residium tar, even when the Btu.'s were correct. This showed us that there were cold and hot spots in the generator. For this we laid the blame partially on the heat burners, partially on the make sprays and partially on the channeling effect of the blast.

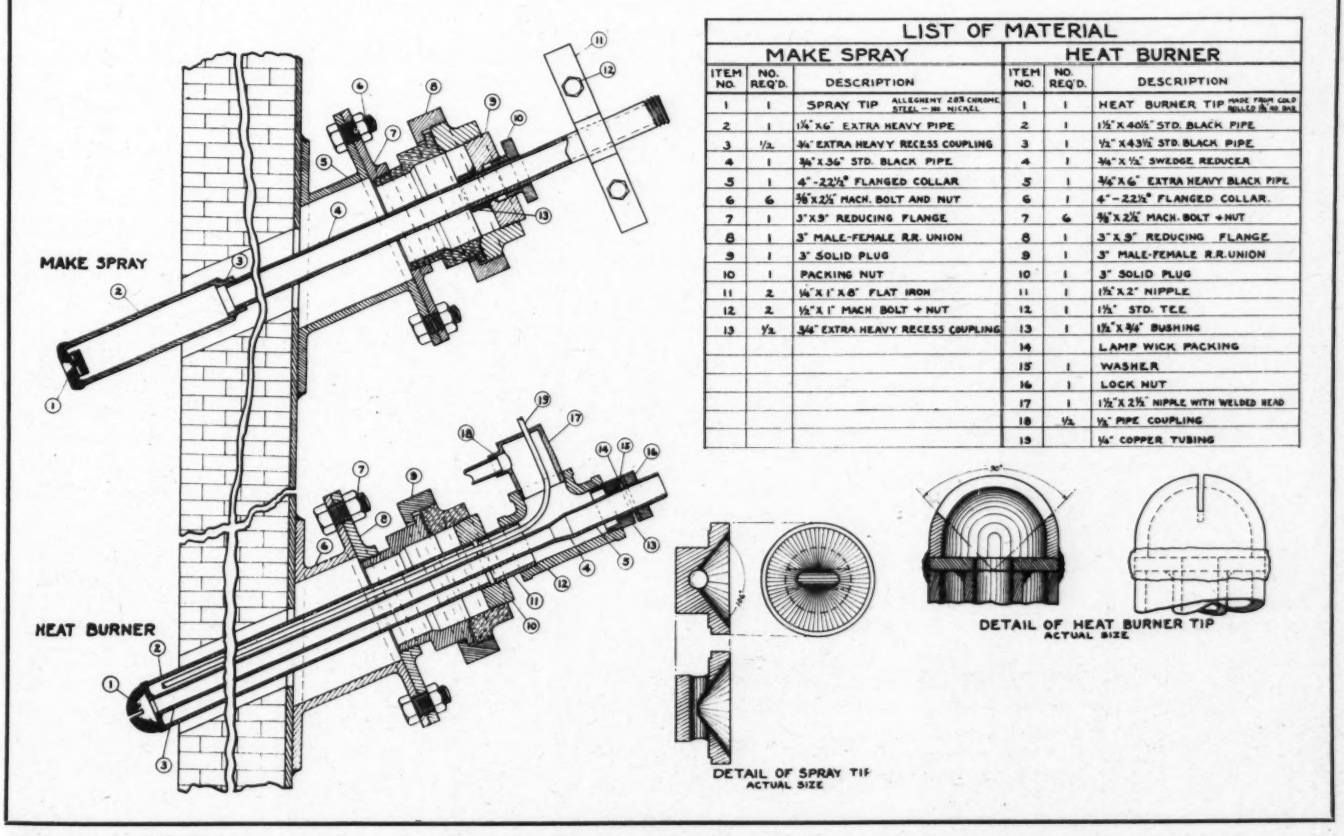
The heat burners were at fault because we were having much trouble with clogging and uneven spraying.

The make sprays were not functioning correctly because in spraying cold diesel oil with steam, the cold oil was condensing the steam and not being atomized. The oil was being poured in spots, which of course cooled these spots excessively.

The air blast had a tendency to channel through the center of the generator.

To the heat burners we did very little at first, merely putting on a rounded tip with a small slot to give better spraying of steam and oil.

To the make sprays we made considerable change. We abandoned the injectors; used no steam with the oil. We carried full oil pressure to the nozzle which was conical in shape with the oil spraying from two opposing holes at the tip of the cone, causing an excellent fan-shaped spray. The oil pressure at the spray tip was about 60 to 80 psi. A check valve was installed in both the steam and oil pipes just before they join in the common spray tube. Steam, of course, was used for keeping the spray cool while oil was not flowing through it. The steam pressure was reduced to 20 psi. and left on at all times. Then it was only necessary to open the oil valve and the oil at 60 to 80 psi. overcame the steam pressure, closing that check valve. When the oil



LIST OF MATERIAL

MAKE SPRAY			HEAT BURNER		
ITEM NO.	NO. REQ'D.	DESCRIPTION	ITEM NO.	NO. REQ'D.	DESCRIPTION
1	1	SPRAY TIP ALLEGHENY 28% CHROME STEEL — NO NICKEL	1	1	HEAT BURNER TIP MADE FROM COLD ROLLED 1/4 NO. BAR
2	1	1¼" X 6" EXTRA HEAVY PIPE	2	1	1½" X 40½" STD. BLACK PIPE
3	½	¾" EXTRA HEAVY RECESS COUPLING	3	1	½" X 43½" STD. BLACK PIPE
4	1	⅜" X 36" STD. BLACK PIPE	4	1	⅜" X ½" SWEDGE REDUCER
5	1	4" - 22½° FLANGED COLLAR	5	1	¾" X 6" EXTRA HEAVY BLACK PIPE
6	6	⅝" X 2¼" MACH. BOLT AND NUT	6	1	4" - 22½° FLANGED COLLAR
7	1	3" X 3" REDUCING FLANGE	7	6	⅝" X 2¼" MACH. BOLT + NUT
8	1	3" MALE-FEMALE R.R. UNION	8	1	3" X 3" REDUCING FLANGE
9	1	3" SOLID PLUG	9	1	3" MALE-FEMALE R.R. UNION
10	1	PACKING NUT	10	1	3" SOLID PLUG
11	2	¼" X 1" X 8" FLAT IRON	11	1	1¼" X 2" NIPPLE
12	2	½" X 1" MACH BOLT + NUT	12	1	1¼" STD. T.E.
13	½	¾" EXTRA HEAVY RECESS COUPLING	13	1	1¼" X ¾" BUSHING
			14		LAMP WICK PACKING
			15	1	WASHER
			16	1	LOCK NUT
			17	1	1½" X 2½" NIPPLE WITH WELDED HEAD
			18	½	½" PIPE COUPLING
			19		¼" COPPER TUBING

FIG. 1. Details of make spray and heat burner assemblies of improved gas generator spray system.

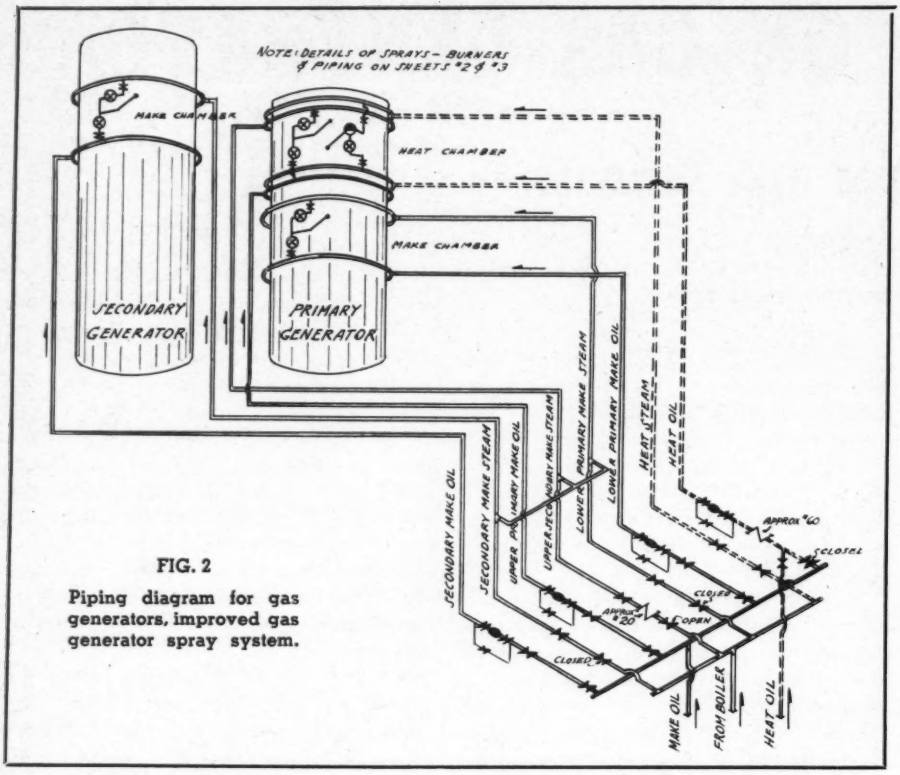


FIG. 2

Piping diagram for gas generators, improved gas generator spray system.

valve is closed at the end of the make period, the oil pressure drops immediately and its check valve closes and the steam at 20 psi. automatically flows through the spray until the oil is again turned on. (See Fig. 1.)

Complicating the sprays as we had done of course led to trouble, as the heat would burn and carbonize the nozzles. We overcame these difficulties as follows:

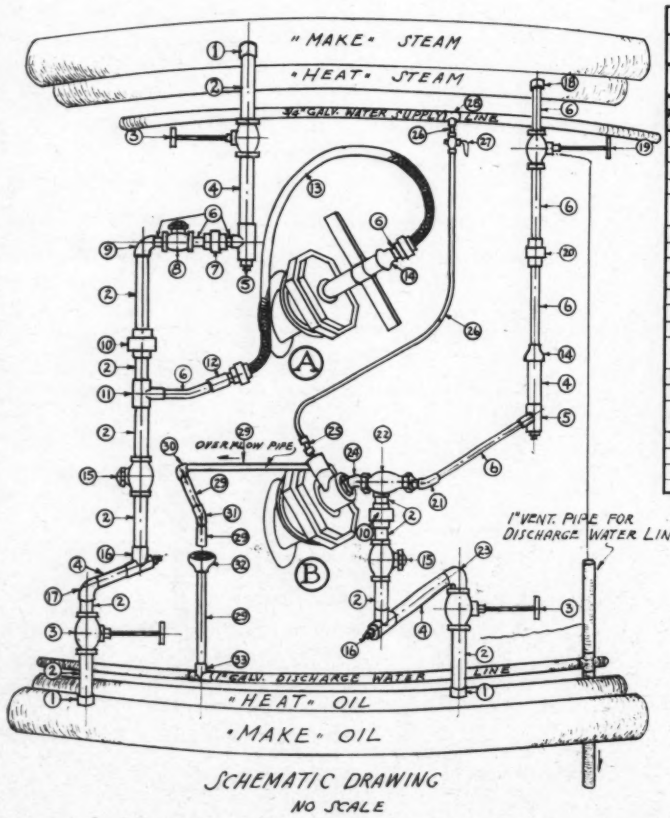
The heat burners, which we had reduced to four per generator, we enclosed in a water jacket and kept cool by running a small stream of water through them. This water was subsequently used in the boilers. (See Fig. 1.)

The make sprays were equipped with nozzles made of high chrome steel to minimize burning and subsequent clogging. In addition, the sprays in the top primary, which are subjected to extremely high temperatures during stand-by periods, were equipped with flexible metal hoses so they could be withdrawn quickly into the lining of the generator or inserted for gas making.

The results obtained after the above burners had been in service for 10 months on four generators were as follows:

When opening the stack valve the generators "cleared" in from 15 to 25 seconds, which was only one-half to one-third of the time required prior to this change. This allowed for more heating time. There is no cloud of dense smoke and no generators have lighted at the stack when the stack valve is opened. The tar is uniform in texture with no evidence of lamp black or very little light oils.

The operation of the generators is simplified, which is of great benefit because of the inexperience of operators that are now available. It has tended to standardize the operation because it



BILL OF MATERIAL

PIPING FOR PRIMARY GENERATOR SPRAYS

DETAILS & BILL OF MATERIAL FOR BURNER & SPRAY ON SHEET #2

A-MAKE-SPRAY			B-HEAT-BURNER		
ITEM NO	NO REQ'D	DESCRIPTION	ITEM NO	NO REQ'D	DESCRIPTION
1	2	¾" RECESS SOCKETS	1	1	¾" RECESS SOCKETS
2	7	¾" PIPE NIPPLES (VARIOUS LENGTH)	2	4	¾" PIPE NIPPLES (VARIOUS LENGTH)
3	2	¾" GLOBE VALVES	3	1	¾" GLOBE VALVE
4	2	¾" PIPE NIPPLES (EXTRA HEAVY)	4	2	¾" PIPE NIPPLES (EXTRA HEAVY)
5	1	¾" x ½" TEE WITH STRAINER ¾" x ⅜" BUSHING & ⅜" PLUG	5	1	¾" x ½" TEE WITH STRAINER ¾" x ⅜" BUSHING & ⅜" PLUG
6	5	½" PIPE NIPPLES (VARIOUS LENGTH)	6	4	½" PIPE NIPPLES (VARIOUS LENGTH)
7	1	½" UNION WITH ORIFICE	10	1	¾" UNION
8	1	½" CHECK VALVE (NMD)	14	1	¾" x ½" REDUCER
9	1	¾" x ½" REDUCING ELL	15	1	¾" CHECK VALVE (NMD) SPRING LOADED
10	1	¾" UNION	16	1	¾" TEE WITH STRAINER ¾" x ⅜" BUSHING & ⅜" PLUG
11	1	¾" x ½" TEE	18	1	½" RECESS SOCKET
12	1	½" COUPLING	19	1	½" GLOBE VALVE
13	1	½" FLEXIBLE TUBING WITH UNION & COUPLING	20	1	½" UNION
14	1	¾" x ½" REDUCER	21	1	½" 90° ELL
15	1	¾" CHECK VALVE (NMD) SPRING LOADED	22	1	2C-H&D-INJECTOR
16	1	¾" TEE WITH STRAINER ¾" x ⅜" BUSHING & ⅜" PLUG	23	1	¾"-90° STREET ELL
17	1	¾"-90° ELL	24	1	¾"-45° ELL
			25	1	½" IMPERIAL FITTING UNION AND COUPLING
			26	2	¼" COPPER TUBING
			27	1	¼" IMPERIAL FITTING & LEVER-HANDLE STOP COCK
			28	1	¾" x ½" TEE (GALVANIZED)
			29	4	½" PIPE NIPPLES (VARIOUS LENGTH) GALV.
			30	1	½" ELL-90° (GALVANIZED)
			31	1	½" ELL-45° (GALVANIZED)
			32	1	1½" x ½" REDUCER (GALVANIZED)
			33	1	1" x ½" TEE (GALVANIZED)

FIG. 3. Piping for generator sprays, improved gas generator spray system.

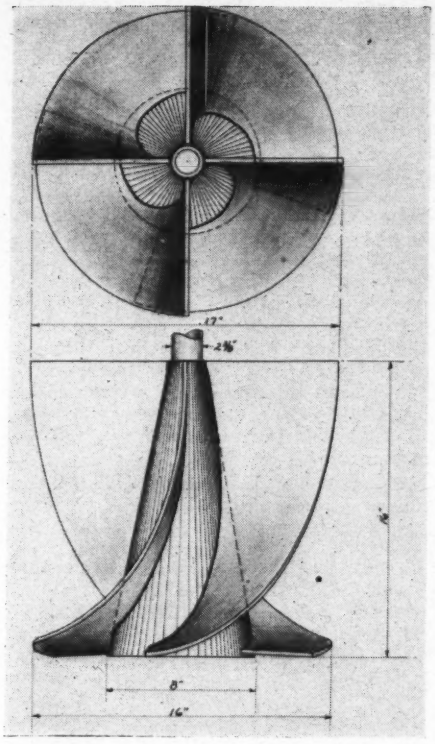


FIG. 4. Blast diverter for equal distribution of air in gas generators.

leaves less of the operation to the discretion of the gas maker. This was proven by the uniformity of the four-generator operation, which has never been the case prior to these changes.

General and detailed piping diagrams for these sprays and burners are shown in Figs. 2 and 3 respectively.

Another change which was made on our generators at the same time that we installed our new sprays and burners was the installation of an air blast distributor in the blast tee. It consisted of a steel cone 2 in. in diameter at the top and 8 in. in diameter at the base, with four curved blades so welded to the cone that it produced a whirl in the air stream. This device was attached to a shaft running up through to the flange of the blast tee. During stand-by periods it could be withdrawn into the top of the blast tee and away from the intense heat of the heat chamber. This is shown in Fig. 4.

This spread produced an even flow of air throughout the full area of the heat chamber. Before installing the device, the blast channeled through the center of the generator, causing cold spots and also burning the checker brick in the center of the heat chamber.

As this device was installed at the same time that our sprays and burners were changed, it is impossible to know the beneficial results produced by it alone. We are confident, however, that the very good results mentioned in connection with the spray changes were to some extent due to this device.

2. Conversion of Water Gas Machines

By J. E. KELLEY

Pacific Gas & Electric Company, San Francisco

J. E. KELLEY, Pacific Gas & Electric Co., San Francisco. Topic: "Conversion of Steere Water Gas Machines at Marysville, Calif., to High Btu. Gas." Presented before the Production Conference of Pacific Coast Gas Association.

WHEN Marysville was changed from water gas to natural, the two water gas generators were converted to make high Btu. oil gas from diesel oil so the plant could be used as a stand-by in case of a shortage of natural gas or an accident to the pipeline. (See Fig. 1.)

The plant had two 9-ft. Steere back-run water gas generators which used Utah coal and diesel oil for making 550 Btu. water gas. The grate bars were removed from the generator and brick piers installed to support the 4½x9x18-in. generator tile and checker brick. On top of the generator tile we put six courses of standard 2½ x 4½ x 9-in. checker brick laid 3 in. open flue. These checker brick were put in to better distribute the air to the oil burners. Six heating burners were installed 12 in. above the checker brick; these burners were set at an angle of 22° and directed upward. The idea was to have a large combustion chamber so that the heat oil could be burned at a fast rate.

No change was made in the carburetor checker brick. This shell had 16 courses of standard checker brick laid so they had a 2½-in. open flue. Several changes had to be made in the high pressure spray nozzles to get higher oil rates.

All of the checker brick was removed from the superheater and an arch was installed with the base 9 ft. 6 in. from the bottom of the shell. Brick piers were installed in the bottom of the superheater, the same as those installed in the generator. On top of the generator tile we put four courses of standard checker brick laid 3 in. staggered flue. Above the arch there were 19 courses of checker brick laid with 3-in. open flue. This made a total of 2368 checker brick in the superheater and 1792 in the carburetor.

Eight make sprays were installed around the superheater below the arch. These sprays were set at an angle of 22° and directed to spray on the checker brick below the arch.

On making the first test run we found that we could not burn over 2½ gal. of heat oil per minute without having considerable smoke showing in the top of the carburetor. After making several adjustments to the carburetor air valve we found that we could burn heat oil at the rate of 5 gal. per minute and have a clear fire in the top of the carburetor which gave a much better heat in the checker brick.

After the heating was adjusted we

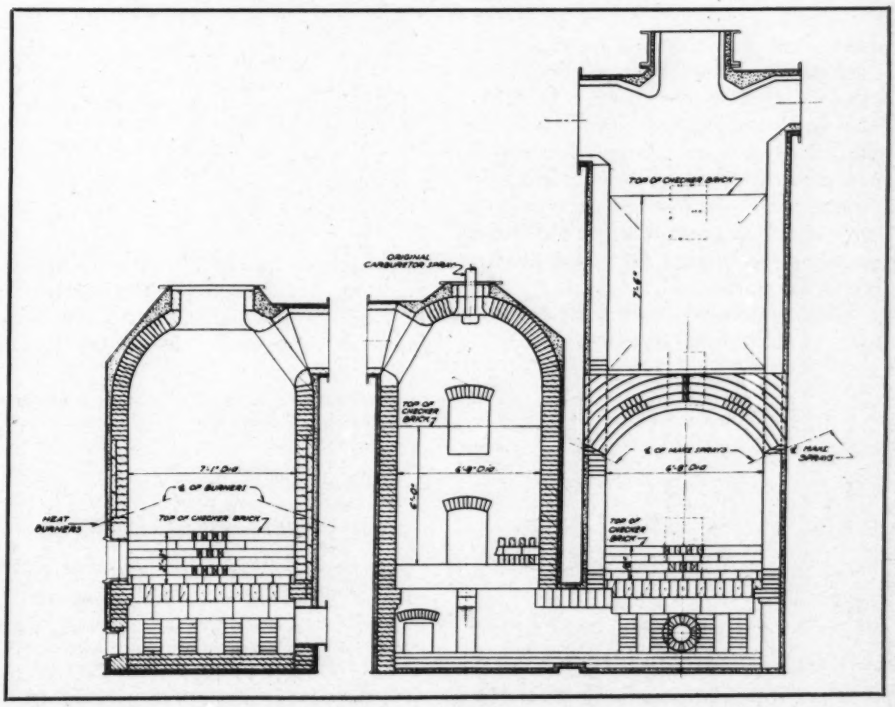


FIG. 1. Carbureted water gas set converted to high Btu. oil gas generator.

made several runs on an average cycle of 10 minutes. We put a maximum of 90 gal. in the carburetor and 40 on the checker brick under the arch in the superheater. On the test we put 75 to 80 gal. in the carburetor and 35 to 40 in the superheater. The minimum Btu. was 831, maximum 1050, with an average of 968. During this test run we found that the capacity of the carburetor spray should be increased so we could shorten the cycle and get more capacity from the generator. New spray nozzles have been installed and the carburetor spray will have a capacity of 25 gal. per minute. On the next test run we expect to get more capacity from the generator, as we can make a shorter cycle.

The generator produced 13,446 cu. ft. of gas per hour per 1000 checker brick, which is much more than our two shell oil gas generators will produce. The maximum gas produced in an oil gas generator using diesel oil for high Btu. gas is 6800 cu. ft. per hour per thousand checker brick. This increase in capacity is due to the checker brick under the arch heating up faster than the make chamber in a two-shell generator and also to the better control of the heat in the carburetor. It also appears that the short stack of checker brick and short cycles will produce more gas than the long stack of checker brick and the long cycles of the two shell oil gas generators.

3. Pressure Drop in Checker Brick

By R. V. DUNKLE

Pacific Gas & Electric Co., San Francisco

R. V. DUNKLE, Pacific Gas & Electric Co., San Francisco. Topic: "Pressure Drop in Checker Brick." Presented before the Production Conference of the Pacific Coast Gas Association.

THE method of calculating pressure drop in oil gas generators is based on fundamental flow equations. The pressure drop consists of two effects, the drop due to friction in the brick channel and the shock losses due to the contraction and expansion at the intersection of each two courses of checker brick. The value of the flow coefficient for shock losses was taken as 0.6 to check data obtained on Generator 9 at Potrero Gas Plant. This coefficient applies to straight flue checker bricking. The exact spacing and condition of the checker brick have a large effect on the pressure drop. It is thought that the pressure drop in new checkers will be somewhat lower and that for old checkers somewhat higher than that predicted by the equation.

The equation expressing the pressure drop is inches of water is:

$$H = 1.22\times10^{-10}\left\{\left(1+\frac{w}{x}\right)^2 \quad (0.6)\right.$$

$$\left[\left(1+\frac{w}{x}\right)^2-1\right]+\frac{0.570}{x\,(x+w)^{.25}}$$

$$\left.\left(1+\frac{w}{x}\right)^2\left(\frac{a}{q}\right)^{0.25}\right\} S\,C\,T\left(\frac{q}{a}\right)^2$$

Since for conditions in checker brick the friction term is small, an average value can be assigned to

$$\left(\frac{a}{q}\right)^{0.25}$$

which can be taken as 0:30.

Then the equation can be written:

$$H = 1.22\times10^{-10}\ f.\ S\,C\,T\left(\frac{q}{a}\right)^2$$

where $f.$ is a factor depending on the brick size and spacing.

The values $f.$ for 2 and 2½ inch brick are given in the following table:

Spacing	W = 2″ brick	W = 2½″ brick
x = 3″	3.05	4.90
x = 2½″	4.51	7.38
x = 2″	7.44	12.7
x = 1½″	15.0	26.8
x = 1″	44.6	84.0

The above equations are also applicable to calculations of pressure drop in grid packed scrubbers. The symbols used are defined as follows:

H = Pressure drop, inches of water
w = Brick thickness, inches
x = Brick spacing, inches
S = Specific gravity of gas (Air = 1)
C = Number of courses of brick
T = Absolute temperature °F
q = Gas rate at standard conditions (cu. ft./min.)
a = Gross section area of generator, sq.ft.
$f.$ = Factor

NOTE: In the above data, straight flues are assumed in the checker brick.

For stagger flues add about 10% pressure drop.

Electric Energy in 1942 Reaches Record High Level

THE Federal Power Commission issued Feb. 18 a preliminary report stating that electric energy produced for public use, together with that produced by railroads, railways, and publicly owned non-central stations, established a record high level in 1942 with a total of 188,827,278,000 kilowatt-hours. This amount corresponds with 168,169,980,000 kilowatt-hours for 1941, and represents a gain of 12.3% over the 1941 amount which was the highest annual total previously reported.

Production by water power in 1942 was 63,980,898,000 kw. hr. or approximately 24.8% more than production by this means in 1941. Consumption of gas was about 234,113,000 M c.f., an increase of 28,957,000 m.c.f. or 14.1% over 1941.

The total installed capacity (name plate rating of generators) of generating plants as of December 31, 1942 was 46,594,862 kilowatts. This represents a net increase of approximately 2,503,000 kilowatts during 1942, a gain of 5.7% over the total at the end of 1941. Hydroelectric capacity of 13,226,931 kilowatts and fuel-powered capacity of 33,367,931 kilowatts reflected increases of 7.9% and 4.8% over 1941 year ending totals.

Coal consumed in the production of electric energy was about 68,429,000 tons or 5.7% over 1941 consumption. Notwithstanding this increase in use, coal stocks as of Jan. 1, 1943 stood 53.2% above stocks on hand Jan. 1, 1942. Requirements for oil, consumption of which decreased from that of the previous year, were about 15,300,000 bbl. or 24.4% less than the 1941 requirements.

■ ■

War Emergency Pipeline Officially Opened Feb. 19

The Texas-Illinois section of the 24-in. War Emergency Pipeline to the East Coast was opened officially Friday morning, Feb. 19, at Norris City, Ill., according to Petroleum Administrator for War Harold L. Ickes.

Oil started flowing into the storage tanks at that point at that time.

Brief dedication ceremonies held at Norris City, initiated the loading and dispatch of the first tank car train of oil to the Atlantic Seaboard.

The first batch of oil to be moved through the pipeline and trans-shipped eastward by tank car was crude oil from the East Texas field. Subsequent movements will consist of alternate loads of crude and fuel oils.

Capacity operation of the 531-mile first leg of the line, expected within the next six to eight weeks, will deliver 300,000 bbl. of petroleum daily at the Norris City terminal and via inter-connecting lines for shipment to Eastern war products refineries and distribution terminals.

Deputy Petroleum Administrator Ralph K. Davies emphasized that petroleum delivered to the East Coast via the "big inch" and tank cars would be used largely to supply military requirements.

■ ■

Michigan Gas Prospect

Prospects of a new field in Clare County, Mich., loomed last month when Taggart Brothers' 1 Mill came in for more than 3,500,000 cu. ft. a day at 1288 ft. The well is located in Section 2, four miles north and east of the present Winterfield oil and gas pool.

Recycling Plant Design and Operation

By HARRY WHEELDON

Lone Star Gas Co., Dallas, Texas*

THE problems in connection with the design and operation of cycling plants and field pipe lines to serve them are generally the same as those encountered in low pressure casinghead gasoline plants, plus those that are brought about by the following conditions that are peculiar to gas-distillate operation:

1. The reservoir contents of a gas-distillate pool originally exist entirely, or nearly so, in the gaseous state, but when produced they become two phase, with both gas and liquid hydrocarbons being present at the well head and in the gathering lines.

2. The cycling plant differs from the conventional gasoline plant in that the distillate extraction is done at much higher pressures than is encountered in the ordinary gasoline plant, and the dry residue gas remaining after gasoline extraction is returned to the producing formation through injection wells in lieu of disposition to pipe line markets.

3. The products obtained in a cycling plant are different from casinghead gasoline in that they contain more of the heavier components than are extracted from dry or casinghead gas, thus offering the possibility for a wider variety in the final products obtained.

In designing a cycling plant it is necessary to know the quantity and quality of the distillate content of the gas. Since it is virtually impossible to obtain a representative sample of virgin gas from a distillate pool to determine the total hydrocarbon content of such gas in the usual manner by fractional analysis, it has been the practice in some cases to determine this total hydrocarbon content by producing the well through a conventional separator, measuring the residue gas from the separator, flashing the distillate collected into a storage tank for measurement, and measuring the flashed vapors. Samples of the residue gas, crude distillate and storage tank vapors are collected and analyzed. From the analysis and volume of each of these three samples the composition of the virgin gas may be calculated. During such tests observations may be made of the relative production of liquids at different pressures so as to indicate the optimum operating pressures and temperatures.

Table No. 1 reflects data gathered in one test conducted through a conventional separator setting.

On the basis of the data gathered from a test through a conventional separator setting and from analysis of samples gathered during such tests, a calculation of the raw gas composition may be made as shown in Table No. 2.

In addition, determination of the physical characteristics of the crude distillate may be made as shown in Table No. 3.

Having determined the quality and quantity of distillate production which can be obtained from the gas under consideration, it is possible to proceed with the design of a plant. This paper is concerned only with the oil absorption type of recycling plant, and is intended to reflect only the experiences of one company in the design and operation of such plants.

Without going into details and mechanics of plant design, such plant may be described in terms of the manner of flow through the plant, together with a general description of the equipment utilized.

Wet gas from the production wells enters the plant through a reducing regulator which is set to hold the desired absorber pressure. Such liquid hydrocarbons as have condensed at this point due to temperature and pressure reduction from formation conditions are separated from the gas in an inlet separator. This liquid is allowed to flow to a distillate vent tank where fixed gases are allowed to separate. The remaining liquid is then allowed to enter the dephlegmator where it is mixed with products recovered by oil absorption.

The comparatively dry gas leaving the inlet separators enters the high pressure absorbers where additional distillate content is removed by oil absorption. Such absorbers are being operated in various plants at pressures ranging from 1700 to 2100 lbs. per sq.

TABLE NO. 1. OBSERVATIONS SHOWING CONDENSATION AT VARIOUS SEPARATOR PRESSURES AND TEMPERATURES

Separator pressure—pounds	900	1200	1500	1800
Separator temperature—degrees F.	78	80	85	100
Distillate recovery—barrels/M³c.f.	8.28	7.76	7.31	5.37
Water content—barrels/M³c.f.	.967	1.025	1.17	.907

TABLE NO. 2. CALCULATION OF RAW GAS ANALYSIS

Mol %	*Separator Residue Gas*	*Stock Tank Flash Vapors*	*Crude Distillate*	*Calculated Compositions Virgin Gas*	*Calculated M c.f. Gals. per Virgin Gas*
Methane	94.10	72.84	.....	93.28	.....
Ethane	3.84	10.86	.....	3.83	.....
Propane	.95	6.20	1.49	0.96	.....
Iso-butane	.20	2.59	0.53	0.21	.0673
Nor-butane	.37	2.93	1.70	0.38	.1214
Pentanes	.22	2.57	4.39	0.26	.0936
Hexanes plus	.31	2.01	91.89	1.08	.5016
TOTAL	100.00	100.00	100.00	100.00	.7839
cu. ft.					
Methane	5,810,675	6,657	.....	5,817,332	
Ethane	237,738	992	.....	238,730	
Propane	58,662	567	777	60,006	
Iso-butane	12,350	237	275	12,862	
Nor-butane	22,848	268	888	24,004	
Pentanes	13,585	235	2,291	16,111	
Hexanes plus	19,142	184	47,924	67,250	
TOTAL	6,175,000	9,140	52,155	6,236,295	
Gals.					
Propane	1,585	16	21	1,622	
Iso-butane	404	7	9	420	
Nor-butane	721	8	28	757	
Pentanes	492	9	83	584	
Hexanes plus	891	8	2,229	3,128	

*Presented before the sessions of the Natural Gas Section of the American Gas Association.

in. The advantages of higher absorption pressures are that the absorber capacity is increased from the standpoint of gas volume, and the capacity of the compressors for raising the pressure is materially increased by reason of the corresponding increase in suction pressure.

Residue gas from the high pressure absorber passes through a scrubber equipped with a mist extractor on its way to the compressing equipment by means of which the pressure of the dry gas is raised to the pressure required to return it to the producing formation through one or more injection wells. The compressor discharge pressure varies in accordance with requirements for injecting the gas and in some cases is as high as 4000 lbs. per sq. in.

The rich oil leaving the absorbers follows the same cycle and moves under the same conditions of pressure and temperature as in a conventional gasoline plant to the distillation equipment where it is stripped of its gasoline content, and the lean oil is returned in the usual manner to the high pressure lean oil pump where it is pumped to the high pressure absorber for resaturation.

The overhead vapors from the still are taken through the dephlegmator where they are mixed with the crude distillate previously drawn from the inlet separator. A side cut consisting predominantly of kerosene is taken out of the dephlegmator. The temperature of the vapors leaving the top of the dephlegmator may be controlled to give a finished product of specification end point. The maximum possible amount of the overhead from the dephlegmator is condensed. The side cut and the overhead condensate from the dephlegmator may be processed into a variety of finished products.

Finished Products

The character of finished products obtained in a cycling plant depends upon the markets available, and the quality of the distillate. Some distillates produce a motor fuel of good natural octane rating and it is possible by the addition of tetra-ethyl lead to raise the octane rating to that of premium grades of motor fuel, while other distillates produce a motor fuel with poor natural octane rating and poor lead susceptibility.

To illustrate by describing the experience at one plant, the principal product is motor fuel, and other products are kerosene, burning oil, and commercial butane. Facilities are available at this plant for blending tetra-ethyl lead to the motor fuel to produce various grades of leaded gasoline. Another plant produces only a stabilized crude distillate containing a relatively small percentage by volume of butane. At a third plant the principal final product is a stabilized crude distillate containing practically no butane; the butane being removed from the distillate and separated into pure fractions. The isobutane is sold to refiners and disposition is made of the normal butane to liquefied petroleum gas dealers.

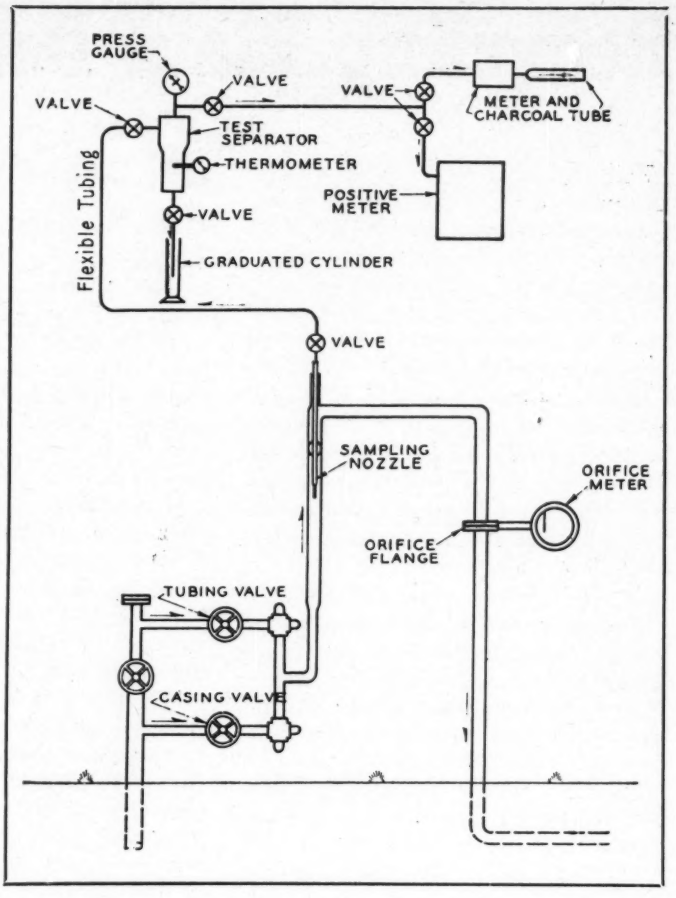


FIG. 1
Showing how sampling nozzle is installed in center of vertical flow line from well.

In the design of pipe line systems for transporting raw gas from the production wells into the plant, pipe of sufficient strength is used to withstand the shut-in pressure of the wells and ample carrying capacity is provided in each line to enable it to transport the maximum volume of gas that will be required at any time during the life of the plant. It has been found that the carrying capacity of pipe lines at high pressures is considerably in excess of that indicated by Weymouth. All of the liquid produced by the wells and that which condenses in the pipe line system is transported to the plant, thus eliminating the necessity of the installation of drips.

TABLE NO. 3. PHYSICAL CHARACTERISTICS OF CRUDE DISTILLATE

IBP	104° F.
5%	156
10%	180
20%	220
30%	248
40%	272
50%	302
60%	334
70%	375
80%	430
90%	500
End point	600
Recovery	99.0%
Residue	1.0%
Reid vapor pressure	6.2 lbs.
A.P.I. gravity	56.0° F.
Doctor	Negative
Corrosion	Non-corrosive

Hydrate Formation

The temperature of the gas is high enough ordinarily to prevent the formation of hydrates in the pipe lines, however, orifice meter piping will freeze up. This difficulty can be largely eliminated by the installation of insulated houses around the orifice meters.

The injection lines are designed to stand the maximum pressure required to return the residue gases to the producing formation and sufficient line capacity is installed to transport the return gas with the practical minimum of pressure drop through the pipe lines.

In the routine operation of cycling plants, it is necessary to have some form of test to determine the distillate content of the gas from each well for

the purpose of allocating the plant production to the various wells or units. It is desirable that this test be as simple as possible so as to require a minimum of time and effort to obtain satisfactory results.

While there is no standard method for such testing, some operators are using a variation of the standard compression and charcoal test method. A sampling nozzle is installed in the center of the vertical flow line from the well as shown in Fig. 1. The nozzle is accurately calibrated so that a representative sample of gas and liquid may be obtained by regulating the flow through the sampling nozzle so that approximately the same linear velocities are obtained through the sampling nozzle as through the flow line. The sample thus collected is passed through a small separator where the pressure is reduced to 250 lbs. per sq. in. and the liquid collected in the separator is flashed to atmospheric pressure and drawn off. The residue gas leaving the test separator is measured through a positive meter and its gasoline content is determined by the charcoal method. The accumulator yield plus the charcoal yield of the residue gas is the total distillate content of the gas.

This test has also been found to be very useful in determining the quantity of water produced by a well. This is done by measuring the quantity of water collected in the test separator and by making tests on it to determine whether or not it is fresh or salt water. It has been possible by use of such tests to trace water production that was first detected in the plant to its source at a well in a minimum of time.

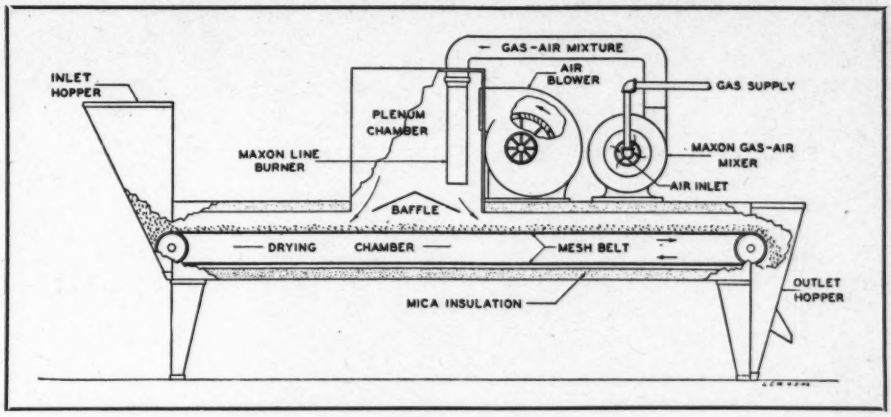
It is believed the above described cycling operations meet all of the requirements of conservation order M-68, which reads in part: "It is imperative to an effective prosecution of this war that the production of petroleum be conducted under circumstances and conditions which will assure a maximum recovery of petroleum and associated hydrocarbons, and which will not involve a waste and inefficient use of the limited quantities of critical material available for petroleum production."

■ ■

New Gas Pool Tied in To Cities Service Lines

The Polo shallow gas pool in Caldwell County, Mo., upon which the Skelly Oil Co., Tulsa, Okla., holds all the leases, will be connected to the Cities Service Gas line at Independence through a 38-mi. 12-in. gas pipe line.

There are 16 gas wells in the Polo field with an open flow of approximately 35,000,000 cu. ft. daily. Work on the line was expected to start in July and be finished in about 45 days.



Direct-fired air heater for shrimp drying.

Shrimp Drying With Natural Gas

By A. J. PERRY, JR.

Pacific Gas & Electric Co., San Francisco, Calif.

THE traditional agent for drying shrimps has been, for centuries, the sun. Recent events in the Orient, where dried shrimps are a staple food, have placed an unusual and heavy demand on the industry in California, and conventional methods are no longer certain enough or fast enough to satisfy this demand.

A direct fired air heater has recently been installed at the Quong Tai Co. in Oakland, Calif., that has proven very satisfactory.

Equipment

It consists of a main chamber 16½ ft. long, 5 ft. wide and 41 in. high. Inside this casing is a plenum chamber and a drying chamber. The drying chamber is covered by 3 in. of exploded mica insulation and the shrimps pass through it on a continuous belt of 3/16 in. mesh stainless steel. The belt is driven by a ½-hp. motor through a 1700-1 reduction gear. Passage through the drier takes 20 minutes.

A No. 3 Maxon Premix unit, mounted above the discharge end, supplies air and gas in proper proportions to a Maxon line burner with a maximum capacity of 1000 cu. ft. of 1150 Btu. gas per hour. This burner is located in the plenum chamber which is 34 in. long, 34 in. high and 5 ft. wide, and placed centrally above the drying chamber.

Drying air is supplied by a No. 19 Aladdin squirrel cage low pressure blower with a capacity of 5000 cu. ft. per minute and driven by a ½-hp. motor. Since shrimp are 85% moisture, recirculation of air is not practical.

Temperature in the dryer is regulated by a temperature controller which is set at about 385° F. A General Controls pilotstat is connected in series with a General Controls K3B solonoid valve in the main gas line. Pilot lines and all motor controls are also connected in the same series so that a power or gas supply failure shuts down the whole plant.

Operation

Two tons of shrimp can be dried in eight hours by this unit from which 320 lb. of meat are obtained. At present gas rates, this averages 6/10c per lb. of dry shrimp produced.

The Quong Tai Co. have expressed complete satisfaction of operating expenses and are surprised at the speed of drying and uniformity of the product.

■ ■

New Price List Issued

The Youngstown Sheet and Tube Co., Youngstown, Ohio, has issued a new price list dated Feb. 1, 1943 covering Youngstown Seamless Oil Country Tubular Goods consisting of new standard sizes and weights published by The American Petroleum Institute in their new specification, and as listed by The American Iron and Steel Institute in their latest specification. The technical men of these two groups in cooperation with the oil and gas producing industries and with the assistance of Mr. Joyce of the National Emergency Standard Specifications Division of the War Production Board adopted these new standard sizes and weights.

The old schedule contained a total of 331 items, while the new schedule contains but 188 items, showing a reduction of 143 items. This elimination of sizes and weights and standardization effort will result in substantial savings in the cost of drilling oil and gas wells.

SALVAGED
Pipe Brings Eas

Reclaimed pipe going through cleaning and priming machines.

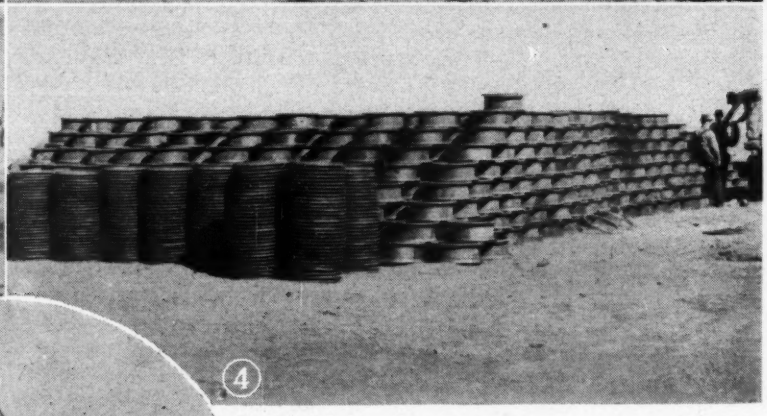
ONE of the biggest salvaging jobs ever attempted in the natural gas industry is now being undertaken by the Lone Star Gas Co. of Dallas, Texas. Inspired by the wartime necessity for conserving vital material, the company is utilizing pipe that has lain underground for 17 years in its project for meeting the increased demand for natural gas from the East Texas field. Despite the length of time that has passed since the line was first laid, the pipe has proved to be in good condition—requiring little more than cleaning and rewrapping.

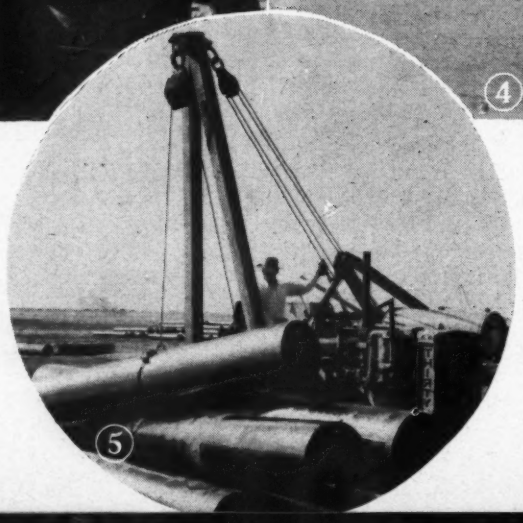
Since last November, with special permission from the WPB, Lone Star has been engaged in taking up 37 miles of 18-in. Dresser coupled pipeline from a location near Gordon, Texas, where it was not so urgently needed due to its paralleling another line, and cleaning it. The salvaged pipe is being relaid parallel to the 20-in. line known as Line S, extending from the Cayuga and Long Lake fields into Irving, a few miles from Dallas. The farthermost point of the line, where it ties into the 20-in., is at McFarland Farms, near Ennis. From that point it approaches Dallas, again tying into the system 15 miles outside of the city near Wheatland.

Lone Star awarded the construction contract on the line to B & M Construction Co. of Oklahoma City and L. E. Farley Co. of Shreveport, La. The hauling and stringing is done by McAlister Trucking Co. of McCamey, Texas. Lone Star itself is handling the cleaning job.

A labor situation, created by a large turnover of help, rain, cold weather and certain creek bottoms constitute the principal problems so far encountered. Out of 375 men currently employed on the project, 60 are Mexican, 150 are negro and the remainder are white. The Mexicans were brought in by the contractors from the region of San Antonio.

The Mexican labor works under its own foreman and is housed near the job in a small tent city. Two meals a day, prepared in the cook shack, are served on the premises. The midday





. Knocking rust off following rings of 17-ear-old pipe; 2, compressors used in ıe cleaning work; 3, straightening cou-ling followers with homemade realigner; , coupling followers and center rings tacked after cleaning; 5, cleaned pipe eing stacked for re-utilization on new pipeline.

Texas Gas To DALLAS

Typical view along the working line as old pipe is relaid.

meal is transported by truck to the job and there dispensed to the Mexicans.

While the construction of the line follows the general pattern for such work, it being a Dresser coupled line, the cleaning process as handled by Lone Star under the supervision of R. Vandercook and Luther Tolbert of the pipeline department presents interesting features.

The pipe as removed from the ground is taken to various points adjacent to the right-of-way. Here it is sent, length by length, through one stationary cleaning machine, then a second combination stationary cleaning and priming machine. Each length of pipe thus receives a double cleaning. Units that are too heavily pitted with corrosion are of course cut out of the pipe. After cleaning and priming, the ends to be welded are beveled. The pipe is then stacked to await the demands of the stringing crew.

WPB permitted Lone Star to purchase coupling bolts and rubber gaskets, but all other portions of the couplings are reused. A certain amount of rust on center rings and followers is knocked and scraped off with pit hammers. Then they are cleaned with wire and air-driven buffer brushes and coated with primer paint.

W. J. Garner, shop foreman of the Lone Star Gas Co., developed a special device for reforming and realigning coupling followers that may have been forced out of line either in removing them from the pipe or in previously tightening them into position. The device is made from junk material. The dies of the straightener were made to conform to the coupling followers.

The followers are lined up one against another in two rows of approximately 75 each. They are heated red hot by means of two Johnson high-pressure kerosene blow torches. The followers are put through the straightener one at a time.

The pipeline is coated with enamel and primer and is wrapped with asbestos felt. A wrapping machine is used in applying the felt. The couplings are coated with service cement.

6, Tightening Dresser couplings with new gaskets and bolts; 7, pipe-wrapping machine applying asbestos felt over enamel; 8, daubing service cement on couplings; 9, miscellaneous supplies being hauled to workmen; 10, lowering coated pipe into trench; 11, Luther Tolbert of Lone Star pipeline department (left), and Luther Liggett, superintendent of B. & M. Construction Co.

Gas Does a Job in a Model Bakery

GAS has been selected by Elmer Warner and Roland Daiber to do the baking and refrigeration jobs at their model $50,000 bakery, located in the Hampton Village Market of St. Louis, Mo. The new shop incorporates many features of the most modern bakeries in the country.

Gas is used for the baking of all the breads, cakes, pies, and all other pastries. Refrigeration is supplied by three commercial Electrolux cabinets to the walk-in box, the eight-door refrigerated dough box, the icing table and a display case for cream.

The bakery and display system has been designed so that every operation from the beginning of the mixing to the baking out in the oven, can be seen by visitors and customers. All equipment is specially built and located so that every necessary operation is reduced to a short turn of the baker for the next required operation.

Large capacity gas-refrigerated dough boxes with proper temperatures and humidity permit the making up and baking of many items in the late afternoon, thus serving the public constantly with oven-fresh bakery goods and making night baking unnecessary.

An 80-bun pan modern automatically controlled proofing cabinet assures uniform and proper rising and fermentation of products to be baked, which greatly assists in the bringing out of flavors supplied by the ingredients used. A revolving oven with a capacity of 24-bun pans which is equipped with automatic controls, soap stone shelves, and a new device for the injection of moisture and the expelling of by-products is an important modern feature.

Alongside this oven is a cooling cabinet where all products are placed as soon as they come out of the oven, which prevents loss of time in finishing.

An icing table with two stainless steel icing urns constantly heats and keeps the icing in a pliable condition. Iced products that cannot be placed in the display cases at the moment can be stored. In a small space between the oven and refrigerated dough box an aluminum steam cooker and doughnut fryer is installed.

All supplies are delivered through a chute into the basement and immediately placed in a large gas-refrigerated walk-in box. The work bench with duplicate bins and drawers on both sides is refilled daily with the necessary ingredients so everything the bakers require is within arm's reach. Ingredients that must be kept cool are stored in two compartments of the 8-door gas-refrigerated dough box and in reach of the bakers working on the side near the ice box.

A small, thoroughly automatic steam boiler is suspended from the ceiling in the basement supplying necessary steam to the aluminum cooker, and also the required steam and humidity to the automatic proofing cabinet. The bakery is heated by a gas-fired convertible system which supplies hot air in winter and cool air in summer.

■ ■

Carbon Black Production May Increase Kansas Gas

Approval by the corporation commission of the application of United Carbon Co., Charlestown, W. Va., for use of an additional 24,000,000 cu. ft. of natural gas daily from the Hugoton field in Kansas promises a substantial increase in the use of this commodity for production of carbon black.

Construction of a new four-unit plant at Ryus, Kans., is planned by the company. Exclusive of wells, lines and other supply facilities, it is estimated the plant will cost about $1,500,000. It will manufacture approximately 48,000,000 lb. of semi-reinforcing black per year. It is understood that United Carbon had been requested by the WPB to construct the plant because it is essential that synthetic rubber be mixed with the new type of black in order to make it usable for tires and other war materials.

■ ■

Allegany Gas Permitted Rate Schedule Increase

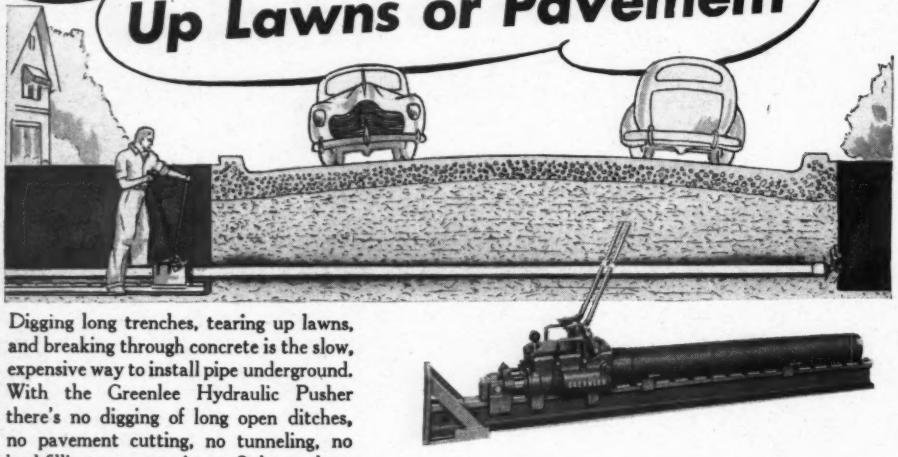
The Federal Power Commission has announced its order allowing increased rate schedules for a limited quantity of natural gas sold by the Allegany Gas Co., Port Allegany, Penn., to Crystal City Gas Co., Corning, N. Y.; North Penn Gas Co., Port Allegany, Penn., and New York State Electric & Gas Corp., Ithaca, N. Y., to take effect as of Oct. 14, 1942. Crystal City Gas Co., North Penn Gas Co., and New York State Electric & Gas Corp. have asserted that the increase to 40c per 1000 cu. ft. will not be passed on to the ultimate consumers.

■ ■

Arkansas Shutdown

Production shutdown of Arkansas gas-condensate fields has been ordered by the State Oil and Gas Commission as of March 1. The ban will remain in force until desulphurization plants, scheduled for completion in mid-June, commence operating. Affected by this order are the Texarkana, Doroheat (Cotton Valley and Line), McKamie and Macedonia fields.

HERE'S HOW you can install Pipe Underground Without Tearing Up Lawns or Pavement



Digging long trenches, tearing up lawns, and breaking through concrete is the slow, expensive way to install pipe underground. With the Greenlee Hydraulic Pusher there's no digging of long open ditches, no pavement cutting, no tunneling, no backfilling, no repaving. Only a short trench is dug to accommodate the pusher and pipe, and one or two men pumping the handles can easily push pipe under sidewalks, streets, highways, embankments, and railroad tracks. No extra power equipment of any type needed . . . the powerful hydraulic units do the actual pushing. The Greenlee No. 790 Pusher will push 1¼ to 4-inch pipe, while the No. 795 Pusher, with 75-ton hydraulic unit, will handle large drainage ducts, concrete sewer pipe, and pipe beyond 4-inch. Both Greenlee Pushers are built compactly into one unit, are easily carried to the job, and can be set up in a jiffy, ready for use. Write today for more information and learn how these Pushers can save you time and money on every pushing job.

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NU-WAYS

Speed Regulation for Natural Gas Engines

EXCERPTS from an article by John G. Norton, chief mechanical engineer, Magnolia Pipeline Co., published in the Sept. 24, 1942, issue of The Oil and Gas Journal.

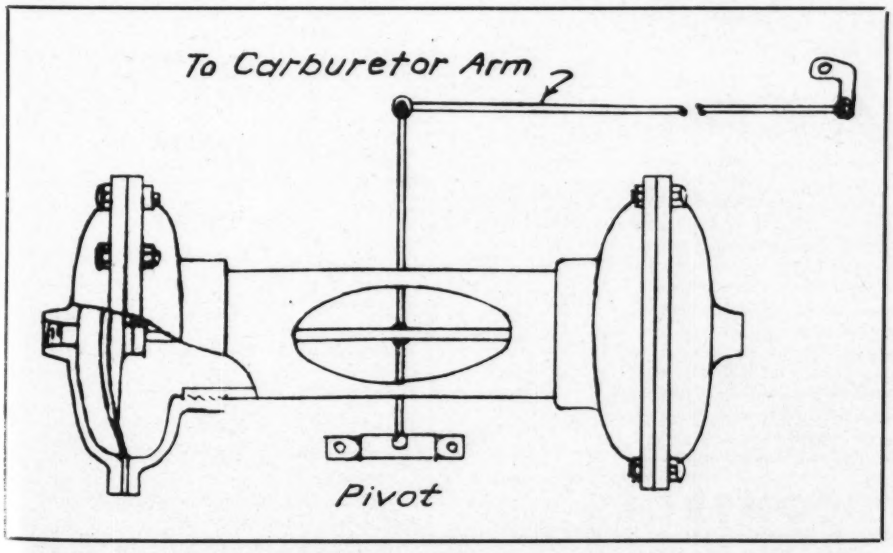
All pressure-control apparatus at the present time is thoroughly reliable and its performance absolutely positive when properly designed and installed.

Due to the present conditions, this apparatus is practically unobtainable but can be replaced by other apparatus or by devices which can be made up in our own shops. All companies have on their systems old gas or pressure regulators, diaphragm-operated valves, etc., and all sorts of uses can be made of these to actuate and perform the work which is required for pressure or automatic control.

Compressed air or natural gas pressure is nearly always available, so the pressure transfer medium is always obtainable. With two diaphragm pressure heads joined together with a common stem and a fulcrum attached to the center of the stem, complete lever movement can be obtained for speed requirements in operating "portable" gas or gasoline engine driven pump units as well as so-called "heavy duty" slower speed units. The incoming suction line pressure to pump operates one of the above diaphragm heads and station-regulated air or gas pressure operates the other diaphragm head. These heads are so regulated by stem and fulcrum travel to obtain the necessary engine and pump revolutions per minute for the line condition. See Fig. 1.

The control shown in the illustrations is inexpensive and is positively reliable due to the fact that its diaphragm head is leakproof. On old two-cycle horizontal gas engines which have only a governor throttling type valve for speed regulation and where the air and gas mixture is regulated or adjusted by hand, this device works perfectly by means of the necessary pressure control. It may be applied in the following manner: On the gas line a diaphragm operated pressure control type valve may be installed between the above mentioned governor throttling valve and the cylinder inlet. This diaphragm pressure control valve is actuated or controlled by a properly designed operating panel from line pressure requirements. The line pressure requirements operate this valve which in turn slows or speeds up the engine and pump. The governor gas throttling valve is adjusted for open position and is operated only by the governor for an overspeed control for engine safety.

On four-cycle natural gas engines a simple diaphragm head with a compensating spring can be installed in the mixing valve stem to open or close the mixing valve for speed regulation. This is done by means of lengthening or shortening the rod and allows the governor to function as designed. The above diaphragm head is operated by air or gas pressure predetermined from other regulators which in turn are controlled by line pressure requirements.



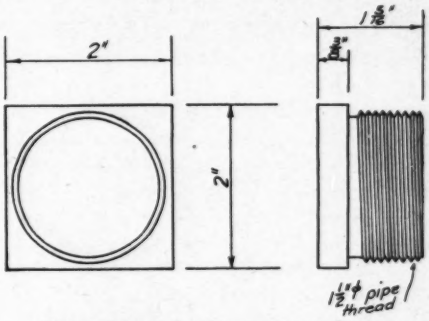
For speed regulation of a four-cycle natural gas engine, a simple diaphragm head with a compensating spring opens and closes mixing valve.

■ ■

View Plug

L. L. Biggs, superintendent of tools, and J. R. Brick, special clerk, Southern California Gas Co., Los Angeles.

Occasionally it is necessary to stop the flow of gas from a main into a service. The normal procedure for this is the insertion of a tapered steel pin through the service fitting into the orifice existing in the wall of the main. Escape of gas is prevented by the use of stuffing boxes.



View plug made of transparent plastic.

In the original drilling operation done to produce the orifice, it may have happened that the drill ran off center, or perhaps was not drilled completely through the main wall. In some cases, the orifice was not drilled but was cut with a torch or a diamond-point chisel. In these cases the offset or irregular orifice prevents a seal with the shut-off pin.

The view plug when installed in a valve attached to the service fitting permits inspection of the orifice, determination of its exact location and condition, and subsequent decision as to how the shut-off can be made. A flashlight provides illumination through the plug.

The view plug is also useful for making various inspections such as determining the condition of the inside of dust pots or the locating of foreign materials within pipe lines.

The plugs are made of Lucite, Plexiglas, or any other Methyl-Methacrylate Resin and has a tensile strength of from 4000 to 6000 lb. per sq. in. and are not attacked by gasoline, heptane, kerosene, cleaning solvent, hexane, pentane, lubricating oils, turbine oil, cylinder oil, or less than 95% alcohol.

Solvents of Methyl-Methacrylate Resins are: Acetone, butyl acetate, dioxan, ethyl acetate, methyl acetate, methyl cellosolve, benzene, toluene, carbon tetrachloride, diethyl pthalate.

ASSOCIATIONS

Distribution Meeting Set For April

A TENTATIVE program has been arranged for the Distribution Conference of the Technical Section of the American Gas Association, scheduled for April 29 and 30 at the Hotel Netherlands-Plaza, Cincinnati. H. Bruce Anderson of Philadelphia, chairman of the distribution committee, will open the meeting at 10 a. m. on the first day. A representative of the Cincinnati Gas & Electric Co. will follow with an address of welcome, after which will come brief addresses by the president of the Association, Arthur F. Bridge of Los Angeles, and Managing Director Major Alexander Forward.

A. V. Smith of Philadelphia will present the first technical paper, "Cathodic Protection Interference," and it will be followed by a paper on "Women in Distribution Work." Open discussion will be held on both papers.

On both convention days round-table luncheon conferences will take place, the Thursday morning session being sponsored by R. F. Hadley, who will deal with "Pipe Coatings and Corrosion," while the Friday session will be under the chairmanship of W. T. Collins for discussion of "Work on Customers' Premises."

On Friday at 9:30 a. m. a panel discussion, conducted by David Edwards of Columbus, Ohio, will be held to cover such topics as servicing under present conditions, personnel and the use of substitute materials. The panel discussion will be followed by a paper on "Teaching Customers to Do Things for Themselves as an Aid to the War Effort."

The Technical Section's Committee on Operation of Public Utility Motor Vehicles will sponsor the final paper on Friday morning, and that session will be concluded with the showing of an interesting and informative film on pipeline construction.

The Friday afternoon round-table luncheon conferences will be under the direction of Chairmen J. F. Collins of New Orleans and T. H. Kendall of Pittsburgh and will deal with "Meters and Metering and the Government Orders Affecting Tin and Meter Use." "Construction and Maintenance" is another topic to be discussed.

■ ■

Natural Gas Management Conference

Burt R. Bay, chairman, Natural Gas Section, AGA, has announced that a Natural Gas Management Conference will be held on April 28. The meeting will take place in the Gibson Hotel, Cincinnati.

Directed by officials of the natural gas industry and of government agencies, the one-day program will deal with major problems of management during the wartime emergency.

New England Gas Holds Separate Division Meetings

Two luncheon meetings were held last month by the New England Gas Association. The first, devoted to the accounting division, took place at the University Club in Boston on Feb. 17. The industrial division convened in Springfield on Feb. 19.

Opening the meeting with an election of officers and directors, the accounting section listened to two featured speakers. G. Reginald Crosby, chief economist of the NWLB, gave an address on wage stabilization procedures. Following him was John E. Buckley, director of Gas, Electric and Water Utilities, Massachusetts Dept. of Public Utilities.

At the meeting of the industrial division, following a report by the nominating committee, members were addressed by L. M. Kimball, deputy administrator of the manufactured gas unit of the War Production Board, who discussed WPB Order L-174.

CALENDAR

March

AGA War Conference on Industrial and Commercial Gas Section—Detroit, Mich., March 11 12.

New England Gas Association Annual Meeting—Statler Hotel, Boston, 10 a. m., March 18.

April

Accounting Conference — Cincinnati, Ohio, April 26-27.

Natural Gas Management Conference— Cincinnati, Ohio, April 28.

AGA Distribution Conference — Cincinnati, Ohio, April 29-30.

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NEGA Plans One-Day Convention in Boston

The New England Gas Association will this year concentrate its customary two-day annual meeting into a one-day convention at the Hotel Statler, Boston, on March 18.

The scheduled program, consisting of two business sessions, presents a variety of pertinent matters.

The morning session, commencing at 9:45 o'clock, will include an election of officers and directors and a report of the association's year by Clark Belden, executive secretary. Association President John West, Worcester County Electric Co., will address the morning session, as will Alexander Forward, managing director, American Gas Association; George S. Jones, Jr., vice president and general sales manager, Servel, Inc.; Col. Willard F. Rockwell, president, Association of Gas Appliance and Equipment Manufacturers; and Alexander Macomber, director of the manufactured gas division, Office of War Utilities, WPB; and C. O. Ruggles, professor of public utility management and regulation and director of the division of research, Harvard Graduate School of Business Administration.

Speakers at the afternoon session will include R. J. Rutherford, vice president, Worcester Gas Light Co.; E. C. Robbins, professor of industrial management, Harvard Graduate School of Business Administration; E. Holley Poe, director of natural gas and natural gasoline, Office of Petroleum Administrator for War, Washington; and Ernest R. Acker, chairman, committee on war activities, American Gas Association.

■ ■

Manpower Bulletins Issued By Selective Service

With the cooperation of the American Gas Association's committee on personnel practices the National Headquarters of the Selective Service System has issued and released to local draft boards a revision of its Occupational Bulletin No. 9 which is in effect the official critical list of occupations in the gas industry.

This bulletin is entirely separate from Occupational Bulletin No. 15 issued Aug. 5, 1942, covering "Petroleum, Natural Gas and Natural Gasoline Activity," though in part the occupations are common to both.

Another bulletin which should prove of value in obtaining deferments for mechanics and maintenance men is Occupational Bulletin No. 42, issued Dec. 22, 1942, covering "Repair and hand trade services."

■ ■

CNGA Issues New Preface On Testing Procedure

The use of two tests in obtaining a better relationship to plant production became standard practice in the California natural gasoline industry Feb. 1. Revisions are contained in the preface to Bulletin TS-351, "Tentative Standard for the Charcoal Test for the Determination of Gasoline Content of Natural Gas," which was approved by the executive committee of the California Natural Gasoline Association, Jan. 19.

■ ■

Oil Compact Meeting

The spring quarterly meeting of the Interstate Oil Compact Commission has been set for April 2 and 3 at Wichita, Kan.

Plans for the meeting include discussion of steps for completion of a national engineering survey of stripper oil fields and secondary recovery methods. The winter meeting of the commission was held at Oklahoma City, Dec. 18 and 19.

Detroit to be Scene of AGA Conference

THE American Gas Association's War Conference on Industrial and Commercial Gas will be held at the Hotel Statler in Detroit on March 11 and 12. B. H. Gardner, chairman of the Industrial and Commercial Gas Section and vice president of Columbia Engineering Corp., Columbus, Ohio, will preside over the morning meetings, and Charles G. Young, vice chairman of the Industrial and Commercial Gas Section and manager of the Springfield (Mass.) Gas Light Co., over the afternoon ones.

The program committee under Chairman Hole A. Clark, Michigan Consolidated Gas Co., has arranged a full schedule for both days. Eugene D. Milener is secretary of the AGA Industrial and Commercial Gas Section.

Members will register at 8:30 a. m., March 11, in the hotel ballroom. At 9:45 they will assemble in the Michigan room, where C. L. Brookschmidt of the Power Division of WPB, and Franklin T. Rainey of the Ohio Fuel Gas Co. will officiate at a discussion on "Industrial and Commercial Gas Operations Under Limitation Orders L-31 and L-174."

At a luncheon in the English room at 12:45 p. m., John W. Batten, chairman of the Committee on Industrial Gas Research and vice president and general manager of Michigan Consolidated Gas Co., will give an address on "Some Things You Should Know About Industrial and Commercial Gas Research."

The afternoon session, assembling in the Michigan room at 2 p. m., will hold a clinic for gas men and manufacturers on the subject of gas in the food service field. Guest speaker will be Harry Holbrook of the Plumbing and Heating Division, WPB, who will present information on government regulations pertaining to sale and installation of equipment in defense areas and for replacement. Henry O. Loebell, chairman of the Industrial and Commercial Space Heating Committee, New York, will hold a discussion entitled "Looking Forward—A New View of the Industrial and Commercial Space Heating Load."

The first day will terminate with a reception by manufacturers of industrial and commercial gas equipment at 5 p. m. in the English room. E. J. Shermire will serve as chief greeter.

The second day's meeting will open at 9:30 a. m. in the Michigan room. "Industrial Gas Equipment of the War and Post-War Periods" will be discussed by E. G. de Coriolis, research director of Surface Combustion, Toledo. Guest speaker will be G. Jerry Bartz, plant engineer of the Chrysler Corp., Detroit, who will talk about war production and the use of gas.

A critical analysis of the utilization of gas in war production and changes taking place daily will be dealt with by John P. Brosius, chairman of the Metal Treating and Melting Group, Equitable Gas Co., Pittsburgh, in an address entitled "What the War Period Is Doing to Metal Treating With Gas." F. W. Marklin, Philadelphia Electric Co., will speak on "New Developments in Furnace Heating Methods and Their Importance During the War and After."

The morning meeting will terminate with a discussion of new applications of gas in the aluminum and magnesium field by C. George Segeler, utilization engineer of American Gas Association, New York.

At 12:45 p. m. in the English room, Dr. Alfred McClung Lee of Wayne University, Detroit, will speak.

The afternoon session at 2 p. m. in the Michigan room will feature the following addresses:

"New Developments and Data on Immersion Tube Heating," Dr. F. E. Vandaveer, assistant director, AGA Laboratories, Cleveland.

"Air Conditioning Commercial Establishments With Gas—A Report of Practical Results," G. E. May, chairman, Technical Advisory Committee for Gas Summer Air Conditioning, New Orleans Public Service, Inc.

"The Outlook for Industrial and Commercial Gas Based on Wartime Experiences," C. V. Sorenson, Northern Indiana Public Service Co., Hammond, Ind.

"New Fields of Dip Lacquering Using De-pearing Equipment," Harold P. Ransburg, Harper J. Ransburg Co., Indianapolis, Ind.

The two-day conference will end with a second reception in the English room at 5 p. m. E. J. Shermire will again be chief greeter, representing the manufacturers of industrial and commercial gas equipment.

■ ■

Corrosion Conference Set For St. Louis, March 25-26

The fifth in a series of soil corrosion conferences will be held March 25 and 26 at the Hotel Statler in St. Louis under the auspices of the National Bureau of Standards, U. S. Department of Commerce. Dr. Kirk H. Logan, chief of the Underground Corrosion Section, will be chairman of the conference.

The conference which will cover all phases of underground corrosion will be open only to those contributing to the program. It is expected that 50 or more national authorities on corrosion will present topics for discussion on an exchange paper basis.

PEOPLE

Norton McKean, formerly vice president, treasurer and general manager, American Meter Co., has been elected president of that concern, thus occupying a position left vacant by the death of **Francis H. Payne.**

Norton McKean

J. C. Diehl

Other changes in the personnel of the company were announced. **John C. Diehl,** formerly chief engineer, and **Arthur E. Norton,** formerly manager of the company's factory at Boston, were named vice presidents. **A. McW. Wolfe,** assistant manager in Boston, was promoted to the managership of the Boston plant serving the New England area.

Arthur F. Benson, formerly assistant chief engineer, was advanced to the position of chief engineer of the firm. **Calvin A. Nichols,** controller and assistant treasurer, has been appointed acting treasurer; and **Robert O. Borden** was promoted to assistant manager.

• •

Cooper-Bessemer compressor expert, **Philip W. Mettling,** formerly located at Mount Vernon, Ohio, has been transferred to the corporation branch plant at 640 East 61st St., Los Angeles. Mr. Mettling will continue his work in the Pacific Coast area on the installation, operation and servicing of Cooper-Bessemer compressors.

• •

William C. Grant, advertising director of the Lone Star Gas Co., Dallas, Texas, is chairman of the Dallas Committee for Noise Abatement, and has been active in the current special drive to curb noise in that city.

• •

Succeeding his father, who retired last month, **H. A. Wallace, Jr.,** formerly vice president of United Fuel Gas Co., Charleston, W. Va., has been made president and general manager of the company and its associated corporations. Since 1938 the new president has been assistant general manager. The senior Mr. Wallace continues his association with the company and its affiliates in the capacity of consulting engineer.

• •

Re-elected at the recent annual meeting of that organization, **James W. Carpenter,** vice president the Long Island Lighting Co., remains president of the Electrical and Gas Association of New York, Inc.

• •

Albert E. Alverson, secretary of Greenlee Bros. & Co., Rockford, Ill., of which Greenlee Tool Co. is a division, has retired after 42 years of service with that organization. Mr. Alverson joined Greenlee in Chicago in 1900, returning to his home city of Rockford in 1904 when the company moved its plant there. In addition to being secretary of the company, Mr. Alverson for many years has been in charge of all tool sales for Greenlee Tool Co. and its parent organization.

O. Vincent Haegg, assistant secretary and manager of woodworking machinery sales, succeeds Mr. Alverson as secretary. Management of tool sales will be handled by **Raymond J. Samuelson,** who has been assistant to Mr. Alverson for 19 years.

Other officer changes at Greenlee include the election of **Albert H. Eggers** as president to succeed **George C. Purdy,** who becomes chairman of the board, and the naming of **Leslie H. Geddes** as second vice president.

• •

Charles E. Kohlhepp, vice president and controller of the Wisconsin Public Service Corp., has gone to Washington as chief of surplus materials division of the WPB. In this capacity he will have charge of coordinating and allocating materials, equipment and surplus supplies of all utilities in the United States.

• •

Laura Randall, home service director of the Gas Service Co, at the Pittsburg and Girard properties, Kansas, has resigned from her position to join the Women's Army Auxiliary Corps.

• •

Edwin Fulton has been appointed division manager of the South Carolina Electric & Gas Co., Florence, S. C. Prior to this appointment he was manager of Consolidated Utilities Corp. plants located at Sumter, Anderson and Greenwood, S. C.

• •

Howard H. Bristol, president, Bristol Co., Waterbury, Conn., has announced three changes in the personnel of his staff. **L. G. Bean** has been appointed vice president in charge of engineering and sales; **Harry E. Beane** has been named sales manager; and **E. L. Stilson** has been appointed assistant sales manager.

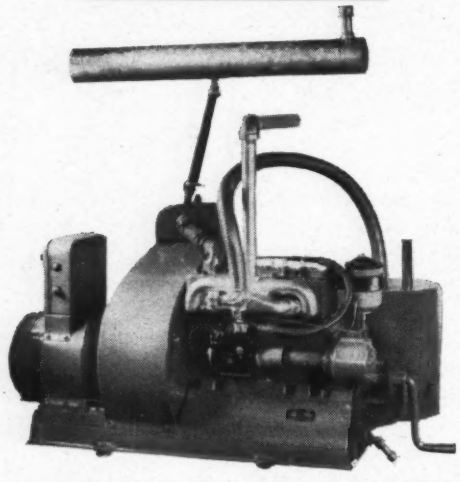
• •

Appointments of **David G. Hawthorn** as section chief of the Production Division and **John H. Thacher, Jr.,** as technical consultant in the Natural Gas and Natural Gasoline Division, were announced recently by Deputy Petroleum Administrator **Ralph K. Davies.** Mr. Hawthorn is chief of the newly formed Section of Materials and Equipment, which will handle the equipment requirements and allocation for the production branch of the oil industry as affected by the control materials plan.

A resident of Tulsa, Okla., Mr. Hawthorn is on leave of absence from the production department of the Amerada Petroleum Corp. Before joining the PAW, Mr. Thacher was

CATHODIC PIPE LINE PROTECTION

VITAL TO VICTORY



4-CYLINDER NEW IMPROVED 1943 MODEL JACOBS CATHODIC UNIT

IMMEDIATE DELIVERY AT PRESENT

Operates on Natural Gas, Butane or Gasoline

Meets any requirements from 1000 to 5000 watts, with ampere maximum 150, volts 10 to 40. Slow operating speed, 600 to 800 r. p. m. insures longer service. Other specifications—Fram oil filter, extra large 5-gal. oil crankcase reservoir, super-size special design oil type air cleaner, heavy duty Scintilla Magneto, extra heavy duty spark plugs, automatic radiator condenser (many months without added water) and automatic fuel shut-off insure peak operation and safety with minimum maintenance.

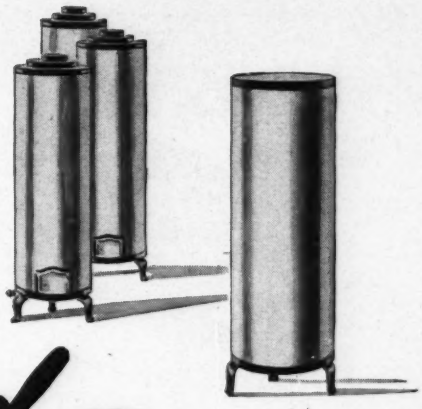
Immediate delivery now. Anticipate your requirements; we cannot assure future delivery schedules and prices. **Write for Complete Literature and Prices.**

THE JACOBS WIND ELECTRIC COMPANY, INC.

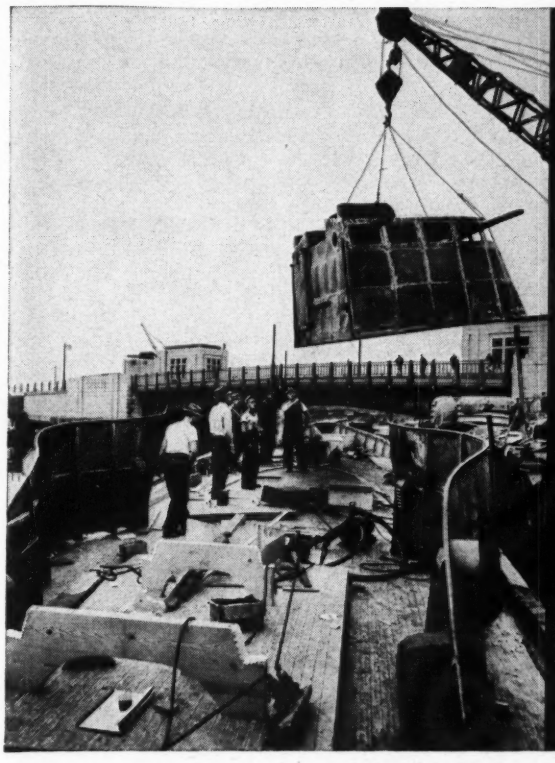
PIPE LINE DIVISION • MINNEAPOLIS, MINNESOTA

America's Leading Manufacturer of Pipe Line Cathodic Plants

The *Everdur* that might have made these tanks...



Instead—



went to make a pilot house for a new coast guard cutter

Everdur* got the call for this tough war task because it is strong, rustproof and highly resistant to salt water corrosion. Because it is readily welded for the soundest type of construction. Because it is non-magnetic—won't affect the performance of vital pilot house instruments. These are some of the reasons why Everdur is in such great demand today.

ANACONDA
from mine to consumer
4227

*Trade-mark of The American Brass Company, Reg. U.S. Pat. Off.

Everdur COPPER-SILICON *Metal*

THE AMERICAN BRASS COMPANY—GENERAL OFFICES: WATERBURY, CONNECTICUT

Subsidiary of Anaconda Copper Mining Company • In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

GAS INDUSTRY of the West LOOKS AHEAD

Committee Appointed to Aid Post-War Appliance Planning

On drafting board, in laboratory and experimental shop, tomorrow's gas appliances are taking form today. ★ Post-war models will reveal even more attractive designs, new materials, improved efficiency, finer features.

MOBILIZING IDEAS

The P.C.G.A. recognizes its obligation to further this far-sighted program. Its President and the Chairman of its Manufacturers' Section have appointed a representative *Post-war Appliance Committee.*

CONTESTS ORGANIZED

This Committee's projects will include *contests* among Gas Company employes, to bring out constructive ideas for improvement of appliances —recommendations based on actual customer-contact, and sales and service experience.

Now, as for 50 years, the Gas Industry of the West, through its Association, looks and plans ahead. ★ But—Victory first—keep on buying War Bonds!

THE PACIFIC COAST GAS ASSOCIATION

SERVING THE WEST—IN WAR AND PEACE

GAS FUEL

attached to the executive office of the chairman of WPB, where he had served as organizational consultant since June, 1942.

As technical consultant to the chief of the Natural Gas and Natural Gasoline Division, Mr. Thacher will chiefly be responsible for technical work incident to providing and maintaining supplies of natural gas for industrial and other essential purposes.

• •

Arthur I. "Spike" Wallace, American Radiator & Standard Sanitary Corp., with headquarters in Pittsburgh, Pa., is now a member of the WPB with office at 226 West Jackson Blvd., Chicago. In his new capacity he will act as regional manager of the industrial salvage divsion, including the supervision of the salvage program for the utilities in Illinois, Iowa and Wisconsin.

• •

Richard W. Corwin of the Ohio Fuel Gas Co., Athens, Ohio, is now Lieut. Richard Corwin stationed somewhere in the Southwest Pacific.

• •

At the annual stockholders' meeting and a subsequent directors' meeting held at the Geo. D. Roper Corp. offices, Rockford, Ill., Jan. 26, **S. H. Hobson** was elected a member of the board of directors and president to succeed **Mabon P. Roper,** who died recently.

Shelby L. Large and **Hugo L. Olson** of Rockford and **Bert Pratt** and **J. Sanford Otis** of Chicago were re-elected to the board of directors.

All officers of the company were re-elected, including **W. E. Derwent, E. Carl Sorby** and **J. P. Curtin,** vice presidents, and **Floyd K. Lawson,** secretary-treasurer. Manufacturing operations will be under the supervision of **Otto Olson**, works manager.

Mr. Hobson, who is a well-known figure in industry, started with the Roper organization 28 years ago and moved progressively from assistant foreman up to the presidency.

As chief engineer from 1919 to 1929 he supervised the entire building expansion program involving the planning and construction of the present Roper plant completed in 1929. When the Roper-owned Blackhawk Engineering Co. was formed in 1941, Mr. Hobson was made president of that company while continuing to act as executive vice president of the Geo. D. Roper Corp.

The Petroleum Administration for War recently announced the appointment of **Herbert R. Gallagher** to the new position of director in charge of its District 5 (Pacific Coast) office.

Mr. Gallagher has had a long and varied experience in the oil industry. He was senior vice president of the Shell Oil Co. in California from 1911 to 1932. At the time of the consolidation of the Prairie Oil & Gas Co. and the Prairie Pipeline Co. with the Sinclair companies in 1932, he went to New York to take the presidency of the combined organization, the Consolidated Oil Corp. He remained in this position until the fall of 1940, when he retired to California. He was chairman of the general committee of Region 1 under the NRA; he was a member of the Petroleum War Service Board during the last World War; and has been a director of the American Petroleum Institute since its inception in 1919.

• •

Russell A. Woodall has been promoted to district engineer of the United Gas Pipe Line Co., Shreveport, La. He was formerly assistant district engineer. **J. P. Jackson,** who has been Shreveport district engineer, is now working in the company's general office engineering department.

• •

The following appointments to American Gas Association staff positions were announced Feb. 15 by **Alexander Forward,** managing director of the AGA:

Edward R. Martin, to be supervisor of statistical activities, and **Thomas J. Shanley,** to be supervisor of statistical research. Both Mr. Martin and Mr. Shanley have been members of the AGA statistical staff for a number of years.

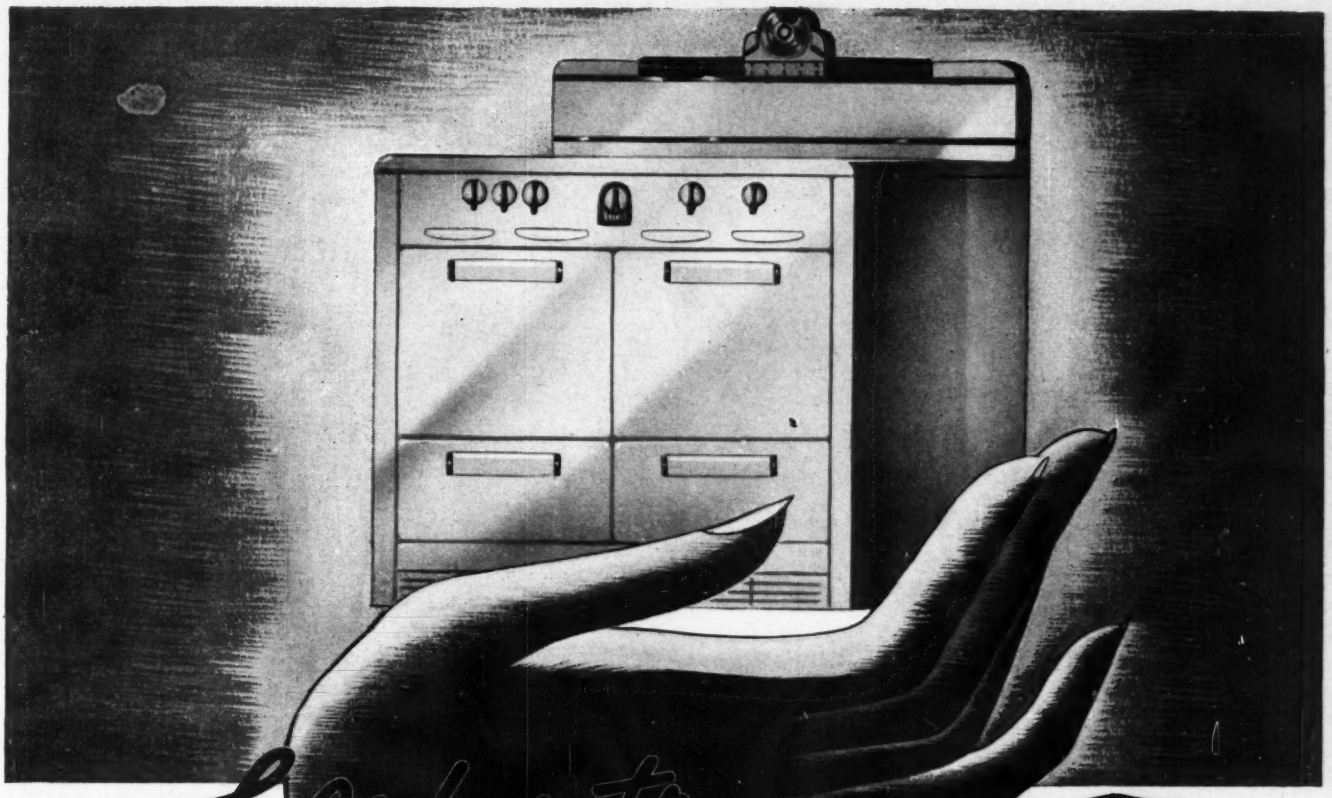
• •

Horace L. Owings has been named manager of the Silsbee district of the Houston Natural Gas Co., Houston, Texas, to fill a vacancy occasioned when **Clifford McKay** was sworn into the navy in January as a chief petty officer.

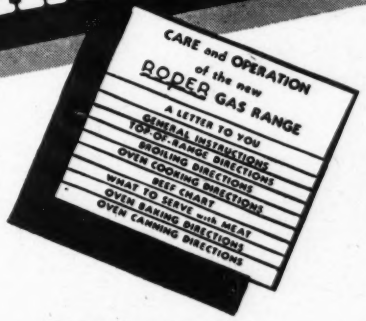
Mr. Owings, who was formerly manager of Electrolux service for the Houston company, is a graduate of Texas College of Arts and Industries.

Mr. McKay, the first Houston Natural district manager to serve with the armed forces,

Left to right: J. P. Curtin, W. E. Derwent, E. Carl Sorby, S. H. Hobson (seated), Otto Olson and F. K. Lawson, newly elected officers of the Geo. D. Roper Corp.



Tell her to HANDLE WITH CARE



Get a Free copy of this booklet. Then fit it into your picture. Available for select distribution at a cost of 10c each. It will prove ideal for your use.

An important job you can do today is to point out how to make gas appliances last longer. Take Roper gas ranges. They're well-built, sturdy, dependable. Reasonable care will see them through with flying colors—will make them last until those new Roper gas ranges will be available after the war.

Distribution of the Roper "Care and Operation" booklet will build up good will among your customers and future prospects. Write for Free sample copy.

GEO. D. ROPER CORPORATION
GENERAL SALES OFFICE AND PLANT: ROCKFORD, ILLINOIS

Sell WAR BONDS NOW
The new ROPER GP GAS RANGE later
CERTIFIED PERFORMANCE

ROPER GAS RANGES FOR ALL GASES INCLUDING (LP) LIQUEFIED PETROLEUM GAS

was manager at Silsbee since that city was piped for natural gas in December, 1937.

• •

Henry S. Harris, assistant superintendent of Union Light, Heat & Power gas distribution department, Covington, Ky., has been appointed acting superintendent of the Kentucky gas and water departments during the leave of absence of **John B. Shaffer,** superintendent.

Mr. Harris was first associated with the utility industry through his connection with the New England Fuel & Transportation Co., Everett, Mass. In 1926 he joined the Los Angeles Gas & Electric Co. and in 1937 when that company merged with the Southern California Gas Co. he assumed the position of measurement engineer with the combined concerns.

• •

F. L. Carmichall, manager of the Fort Worth division of the Lone Star Gas Co., has been elected a director of the Fort Worth Chamber of Commerce for the current year.

• •

American Meter Co. announces the election of **John B. Klumpp** to its board of directors. After graduating from Stevens Institute of Technology in 1894 with an M. E. degree, he was employed by the United Gas Improvement Co. and remained with that organization in various engineering capacities until 1929, at which time he resigned to engage in private practice as a consulting engineer.

Mr. Klumpp is a member of the Institution of Gas Engineers of Great Britain and the American Society of Mechanical Engineers. He is a fellow and life member of the American Institute of Electrical Engineers, and past president of the Society of Gas Lighting, New York, and a member of the Science and Art Committee of the Franklin Institute of Philadelphia. He has been actively identified with the American Gas Association since its formation in 1918, and for 11 years prior to that date was active in the American Gas Institute and National Commercial Gas Association, both predecessors of the American Gas Association.

• •

F. W. Smelts, head of the coke department of the gas division of the B. C. Electric Railway Co. at Vancouver, B. C., has been re-elected as chairman of the Vancouver Welfare Federation. The federation collected $479,547 last year for welfare work in the city.

• •

Chairman **Donald M. Nelson** of the War Production Board has announced a change in his staff. Vice Chairman **Charles E. Wilson** has been named Mr. Nelson's deputy on the combined Production and Resources Board, the function of which is to integrate the production efforts of the United States and the United Kingdom.

Mr. Wilson, who will hold his new position in addition to his post of production vice chairman of WPB, succeeds **James S. Knowlson,** who resigned recently to return to private industry.

• •

Harry Schaller, formerly of the valuation department of the Cities Service Gas Co., Bartlesville, Okla., has been transferred to the Ponca City refinery, where he will be power plant foreman. **W. L. Walker,** recently in charge of the power plant, has been named assistant in the maintenance and construction department.

A MAXIMUM OF ENGINEERING PERFORMANCE

H-M Low Pressure Gas Regulator.
Sizes from 3/8-in. to 2-in.

A Low Pressure Gas Regulator with Efficiency at Its Highest

This Same Precision Production

Is Now Being Used in Making War Materials

To Beat the Axis

Low Pressure Regulators Are Still Available in All Sizes

H-M REGULATOR COMPANY
THERMO CONTROL CO.

800 EAST 108th STREET — LOS ANGELES, CALIF.

Obituaries

Leon B. Jones

Leon Barrett Jones, San Francisco engineer and one-time employee of the Pacific Gas & Electric Co., died in London, England, on Jan. 30 following a stroke. At the time of his death Mr. Jones was engaged in vital war work in England.

Born in Boston, Mass., on May 3, 1890, Leon Barrett Jones later moved with his family to San Francisco. He was educated at Lick School of Mechanical Arts and entered the gas business in May, 1908, at Potrero gas plant. He became assistant engineer and with his father, Edward Campbell Jones, designed the Jones gas generator. During the first World War he was engaged in the production of carbon for gas masks and in 1917 went to Virginia as an officer in training.

After World War 1 Mr. Jones organized the Jones Oil Gas Process Co. He went to England in September, 1937, to build an oil gas stand-by works in Newport, Wales, and while in England became managing director of the Jones Gas Process Co., Ltd., of London. Mr. Jones invented the complete gasification process for the manufacture of oil gas, a process which has been successfully operated in San Diego and Honolulu.

Leon Jones was at one time vice president of the Pacific Coast Gas Association and a gold medalist of that association in 1913 for a paper on oil gas.

■ ■

W. H. McKenzie

W. H. McKenzie, vice president and general manager, the Wyandotte County Gas Co., Kansas City, Kan., died at his home on Feb. 12. He was 80 years old.

Well known in the gas industry, Mr. McKenzie was one of the charter members of the Natural Gas Department of the American Gas Association and was often referred to as the "Dean of American Gas Men."

He first became connected with the gas business when only 14 years old when he began work as a helper in the various departments of the gas manufacturing plant in his home town. A year later he was managing the manufactured gas plant for the Ohio Soldiers and Sailors Home, and when just 16 had complete charge of the gas plant at Xenia, Ohio. He was but 18 when he attended the first National Gas Convention. In 1886 he became superintendent of the United Gas Improvement Co. property at Kansas City.

■ ■

Charles H. Printz

Chas. H. Printz, vice president, the Gas Machinery Co., Cleveland, Ohio, died suddenly of a heart attack at his home in Cleveland on Jan. 31. He was 67 years old.

Eugene Printz, his father, was manager of the coal gas plant in Zanesville, Ohio, and for many years was secretary of the Ohio Gas Association; his son learned the gas business under his guidance and later managed the gas properties in Little Rock, Arkansas for Rufus C. Dawes. Later, he became successively sales manager for the Missouri Fire Brick Co., St. Louis, Mo.; Western Gas Construction Co. of Fort Wayne, Ind. and the Stacey Manufacturing Co. of Cincinnati, Ohio.

In 1914 Mr. Printz moved to Cleveland, Ohio, and was elected vice president of the Gas Machinery Co., which position he held until his death.

BURNERS

JOHN ZINK
ONE STOP BURNER SERVICE

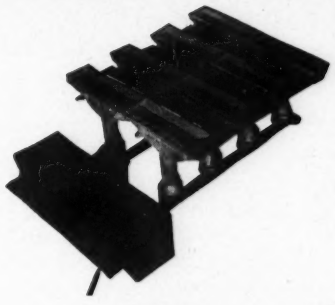
More than fifty types of burners for domestic boilers, heating boilers, industrial boilers and power boilers. The designs are protected by twenty United States Letters of Patent.
John Zink Burners are tailor made for your installations—they will make heat as you like it and when you want it.

BI-MIX BURNERS
For wall firing or floor firing.

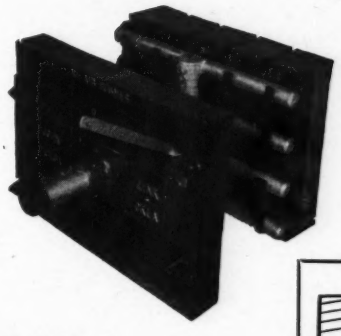
CENTER-FIRED COMBINATION BURNERS
Burning oil and gas with the same heat pattern.

VENTURI TYPE BURNERS
Either straight or angle type.

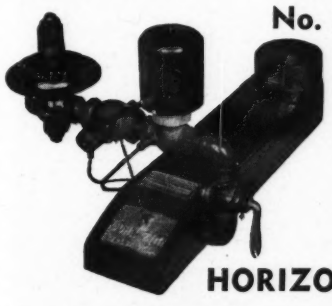
BI-AIR REFRACTORY TYPE BURNERS
John Zink and his engineers enjoy a world-wide reputation of knowing how to burn gas efficiently. They are willing and capable of designing and manufacturing special burners for special purposes.



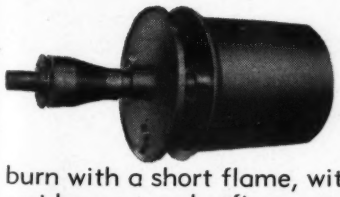
SERIES "V" BURNER
Pre-Mix gas burner — floor type. Absolutely noiseless—especially good for installations in heating plants, in cantonments, churches, schools and apartments. Sizes for every boiler.



SERIES "R" BURNER
Refractory type gas burner —especially adapted for installing in boilers having very low draft and small combustion space.

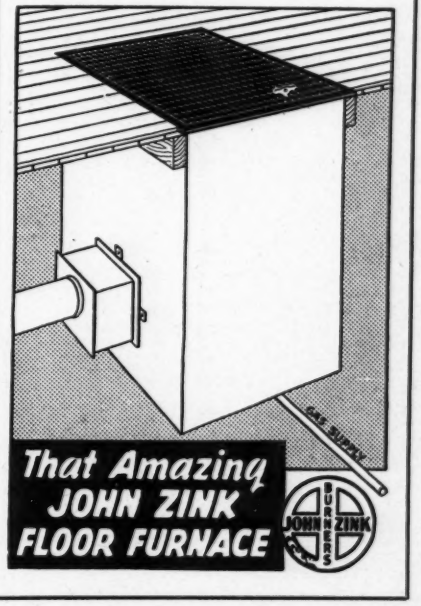


No. 300 FURNACE BURNER
Shown with automatic controls — luminous gas flame type. Applicable to 98% of all domestic furnaces, approved, efficient and economical.



HORIZONTAL BI-MIX BURNER
Burns gases of varying heat value without adjustment. Is not damaged by slugs of oil, gasoline or water that sometimes blow through from the fuel lines. They burn with a short flame, without excess air; natural gas, residue gas and refinery gases.

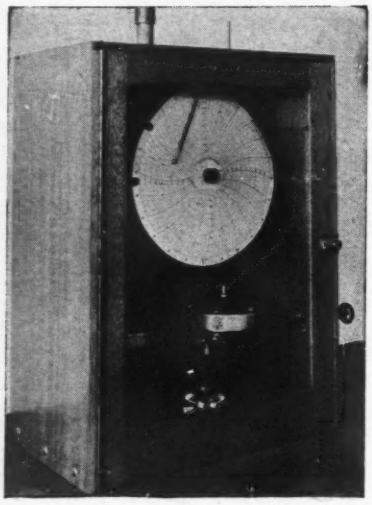
-- WE MAKE OIL BURNERS TOO --



JOHN ZINK COMPANY
Tulsa, Oklahoma

NEW YORK • LOS ANGELES • DETROIT • SAN FRANCISCO

SPECIFIC GRAVITY
of Gases Read
TO SECOND DECIMAL
DIRECT FROM
CHART



ARCCO-ANUBIS
RECORDING GAS
GRAVITOMETER

This dependable, direct-weighing instrument produces highly accurate records of the specific gravity of gases on a circular chart that can be read directly to the second decimal place, and by easy and close approximation, to the third decimal place.

Even under extreme conditions of temperature change, consistent records are always procured, for a temperature-compensating pendulum controls the recording of the specific gravity of the gas always as though the gas were at 60 degrees Fahrenheit.

Careful construction without mechanical complexities such as electric motors or pressure valves, renders this instrument practically frictionless and hence extremely responsive to even minute variations in the specific gravity of the sample. Its sturdiness assures long faithful service. Once it is calibrated and properly installed, no further attention is required except to wind the clock, change the chart, and ink the pen.

Send for New Bulletin

**AMERICAN
RECORDING CHART CO.**
3113 E. 11th St., Los Angeles, Calif.

Decentralization of War Production Board

ANOTHER long step in the decentralization of War Production Board activities was made public Feb. 24 when Chairman Donald M. Nelson announced a new WPB administrative order which directs that after March 1 applications for priority assistance on Form PD-1A be filed with the nearest of the 131 WPB district offices and authorizes the 12 regional offices beginning March 15 to assign preference ratings on PD-1A certificates to deliveries of materials valued at $100 or less.

Under the new procedure, which will simplify greatly the problems of business men and others needing occasional priority assistance, WPB's field offices will be responsible for seeing that all PD-1A applications are properly filled out and wil forward them to Washington, or to the regional offices if they fall within the value limitations set by the order.

Another administrative order, effective March 8, also announced Feb. 24, empowers regional offices to authorize construction under Conservation Order L-41, and to assign preference ratings to deliveries of necessary scarce materials to building operations costing less than $10,000, except industrial and certain other listed types of construction. Applications for authority to begin construction under this procedure are also to be filed with the nearest WPB district office.

■ ■

Booklet Welcomes New Cooper-Bessemer Employees

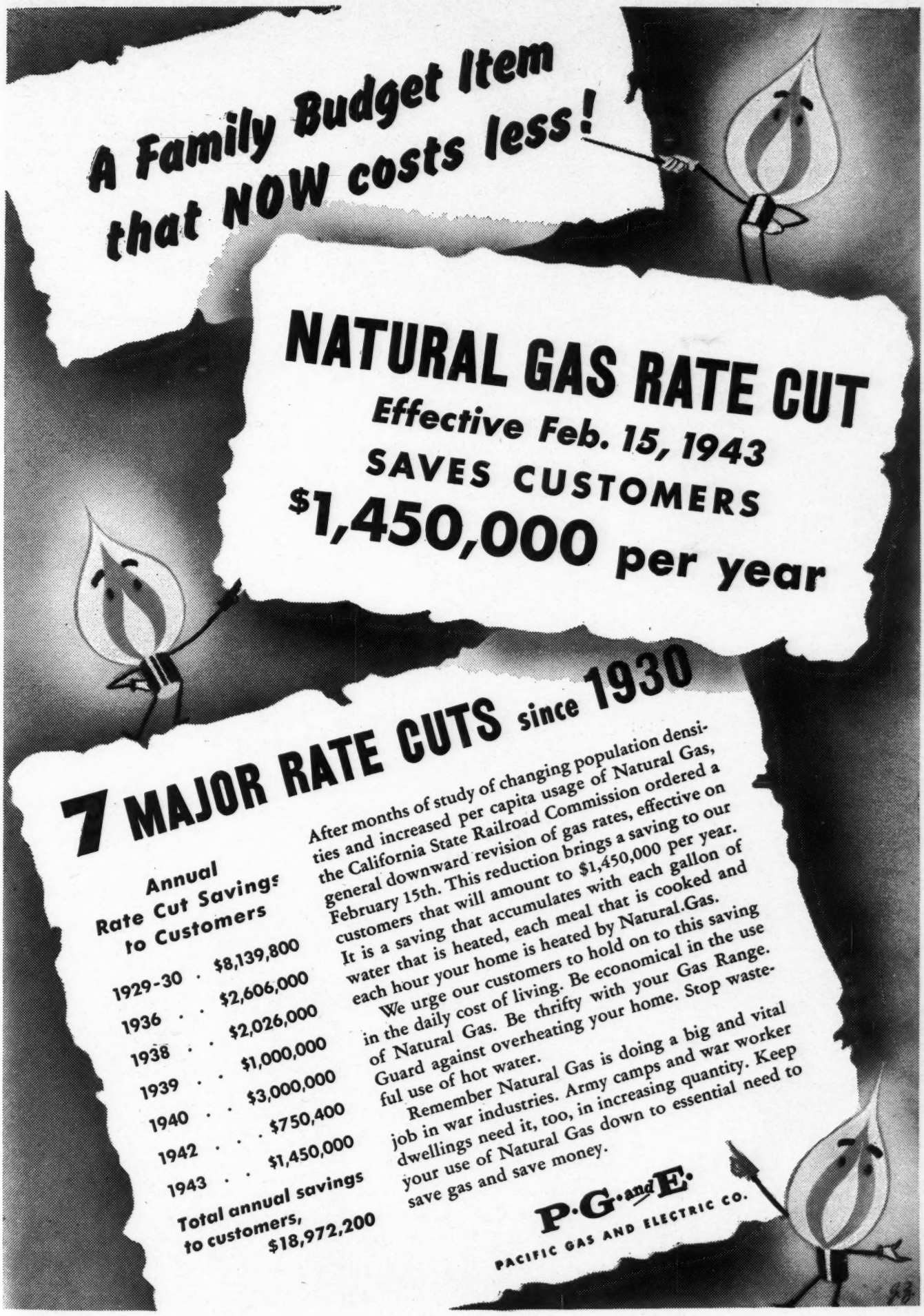
"Partners in Industry" is the title of a 44-page booklet presented each new employee by the Cooper-Bessemer Corp., Mt. Vernon, Ohio, one of the oldest builders of diesel and gas engines and compressors.

Each little "welcome booklet" is personalized by writing in the recipient's name immediately below the title and over the company signature, thereby promoting the feeling of "partnership" in the corporation.

The booklet presents valuable data which answers many of the questions that a new employee would logically want to know in order that he may have a better understanding of the conditions governing his work.

Tappan Range Survives Fire To Serve Again

When the home of Mr. and Mrs. W. M. Jones burned to the ground with all its furnishings last February, it was rated as a total loss and the Jones started building a new home at another location. In June, the Jones were ready to start furnishing and remembering the old range that had been standing in the rubble, he asked C. E. Appling, local Tappan Range dealer, if it had any turn in value. Mr. Appling sent out a truck, the range was dug out of the rubbish and brought to his shop. A test disclosed the valves, thermostat and safety pilot were still operating perfectly, so Mrs. Appling decided to try baking a cake in it. The cake turned out okay (baked before any adjustments were made), and so did the range when new exterior parts were installed.


A Family Budget Item that NOW costs less!
NATURAL GAS RATE CUT
Effective Feb. 15, 1943
SAVES CUSTOMERS
$1,450,000 per year
7 MAJOR RATE CUTS since 1930
Annual Rate Cut Savings to Customers
1929-30 . . $8,139,800
1936 . . $2,606,000
1938 . . $2,026,000
1939 . . $1,000,000
1940 . . $3,000,000
1942 . . . $750,400
1943 . . $1,450,000
Total annual savings to customers, $18,972,200
After months of study of changing population densities and increased per capita usage of Natural Gas, the California State Railroad Commission ordered a general downward revision of gas rates, effective on February 15th. This reduction brings a saving to our customers that will amount to $1,450,000 per year. It is a saving that accumulates with each gallon of water that is heated, each meal that is cooked and each hour your home is heated by Natural Gas.
We urge our customers to hold on to this saving in the daily cost of living. Be economical in the use of Natural Gas. Be thrifty with your Gas Range. Guard against overheating your home. Stop wasteful use of hot water.
Remember Natural Gas is doing a big and vital job in war industries. Army camps and war worker dwellings need it, too, in increasing quantity. Keep your use of Natural Gas down to essential need to save gas and save money.
P·G·and·E·
PACIFIC GAS AND ELECTRIC CO.

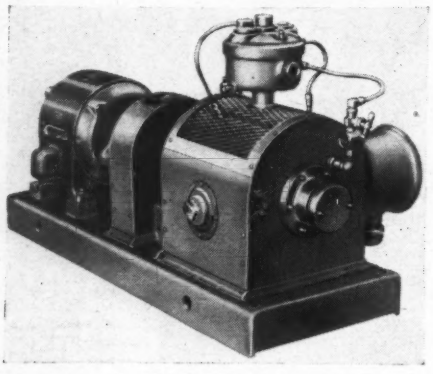
PRODUCTS

Compressor and Vacuum Pump

J. C. Buckbee Co., 2227 East 37th St., Los Angeles.

Model: The Patented "Rotovane" Air and Gas Compressors and Dry Vacuum Pumps.

Application: For testing aircraft equipment and handling tank vapors in the petroleum



industry and for the process of reclaiming butane and high octane gases.

Description: Multi-vane Rotary Air and Gas Compressors and Dry Vacuum Pumps have been widely used in Europe for over 25 years. During the past 12 years American-made machines of this type have been steadily meeting with approval in most every industry. The "Rotovane" Air and Gas Compressors and Dry Vacuum Pumps are an improved and efficient design of the multi-vane type machine. They are simple, economical and automatic and require little more attention than an electric motor. They have few moving parts, have no valves to carbonize and leak, hold their efficiency and maintain their output. They may be directly connected to electric motors or gas engines and require little floor space or foundation.

"Rotovanes" are built in sizes ranging from 20 to 1500 cu. ft. capacity per minute, and for any pressure up to 125 lb. psi. or for vacuums up to 28 in.

■ ■

Water Nozzle

American-La France-Foamite Corp., Elmira, N. Y.

Model: Model 10F., "Alfco-spray" nozzle for water hose.

Application: Offers protection against possibility of spreading fires as a result of incendiary bomb attacks; provides effective water screen to protect men and property in class A fires (wood, rubbish, textiles, etc.).

Description: This is an all-spray nozzle without a straight stream. From the shut-off position, a slight turn of the tip immediately gives a cone spray of 40°. Further slight rotation produces increasing cones up to full curtain of 150°, with reversal back to shut-off without any intervening straight stream. The nozzle is shown as Model 10F. It can be furnished for any 2½-in. hose thread, also for Underwriters' tip thread, 2-in. hose thread, or 1½-in. thread.

In the 40° spray position, the capacity is about 95 gpm. and 135 gpm. at 50 lb. and 100 lb. inlet water pressures respectively. The full capacity at these pressures is approximately 170 gpm. and 215 gpm.

■ ■

Lightning Shield

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

Model: "Umbrella" lightning shield.

Application: This wire "umbrella" is designed to shield vital explosives plants and oil storage centers from lightning. Using a minimum of strategic materials, the shield easily deflects lightning driving earthward at more than 11,000,000 miles a minute.

Description: The shield consists simply of a steel wire strung above the building to be protected and anchored on tall wood poles at each end. The wire is then connected to steel rods buried in the ground. By its design, danger of lightning leaping to metal sections of the building and causing sparks has been eliminated.

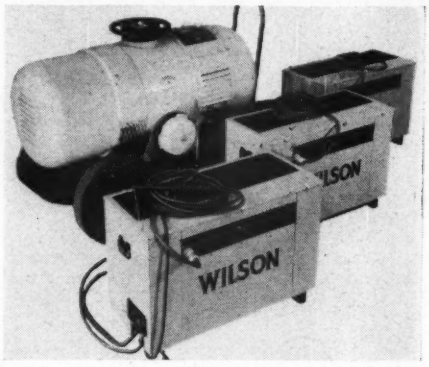
■ ■

Control Stations

Wilson Welder & Metals Co., New York.

Model: Honey Bee Arc Control Station.

Description: These arc control stations are made in capacities of 75 amp. and 150 amp. They are an auxiliary electric device, connected in series with the welding circuit of any constant potential arc welding generator. A portable switch held in the opera-



tor's hand gives the operator remote control of the welding current within predetermined limits. This switch may be combined with the electrode holder if desired.

When two or more arc control stations are hooked up to a single generator, a like number of welding arcs can be operated simultaneously. Each operator can regulate his own current and weld as he sees fit without affecting the other in any way.

Using two 75-amp. arc control stations, a 200-amp. generator can serve two operators instead of one. Similarly, a single 400-amp. generator can be made to serve 5 or 6-amp. stations, or three or four of the 150-amp. stations.

Catalogs

• A. M. Byers Co., Pittsburgh has prepared on unusually colorful and easy-to-read new technical bulletin entitled, "Wrought Iron for Underground Service." Designed to be of service to private and municipal water works engineers, electrical and civil engineers, oil and gas operators, heating men, plant maintenance men and others, the new booklet discusses the most important factors effecting soil corrosion of underground piping, weighs theory against test results and outlines installation histories of water wells, lines, lawn sprinkler piping, oil and gas wells and lines, gasoline lines and tanks, and electrical cable conduit.

• •

• Cochrane Corp., 17th and Allegheny Ave., Philadelphia, Pa., has presented a paper, "Conditioning Feed Water for High Pressure Boilers" by Austin C. Dresher, an authority on boiler feed water conditioning. The article sums up the requirements to be made in conditioning boiler feed water, as well as the discussion on the importance of scale removal, corrosion, carry-over and embrittlement. The different methods employed in feed water conditioning are discussed, such as the hot process softener, the zeelite in its many forms and ramifications, as well as the reduction of silica.

SOMEWHERE OVERSEAS

Countless Spencer Thermostatic Discs—the discs that once provided positive snap-acting gas-heater controls for you—are now doing new and bigger duties for the armed forces. That's why Klixon Gas Valves and Room Thermostats are not being made today.

SPENCER THERMOSTAT CO. KLIXON Attleboro, Massachusetts

Stipend for Gas Students Increased by College

The fellowship stipend for students of the Institute of Gas Technology in Chicago has been increased in recognition of the increased living costs of these abnormal times, it has been announced by Dr. Lincoln R. Thiesmeyer, educational director of the Institute.

The stipend now totals $1135 for the academic year of nine months instead of the usual $1000. The monthly allowance has been increased from $75 to $90 for this year and for the immediate future. In addition, the fellowship stipend includes $325 for tuition and fees.

This action was taken recently when the Gas Institute's Board of Trustees, through their executive committee, voted to grant this additional allowance.

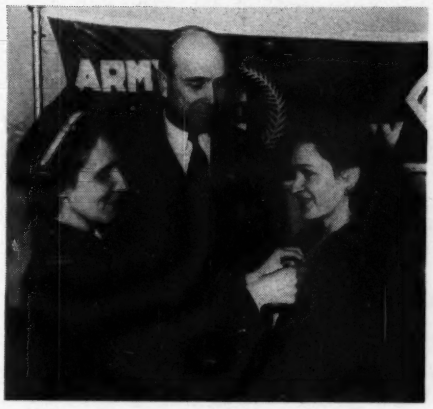
The executive committee also decided that the summer expense allowance for fellows should be increased from $125 to $140 a month during this period of greater living costs. This allowance is given during the fellows' three months of summer training in the gas industry, which is a required part of the Gas Institute's training program.

■ ■

New Pool Tapped

Completing a test on the Hugh Sackette farm, two miles southwest of Smithfield in Fayette County, Penn., Orville Everly's well shows signs of opening a new shallow gas pool. Drilled to 1180 ft., the hole showed 900,000 cu. ft. of gas at 1163-1174 ft. Another location is being made.

Army-Navy "E" Awards



Lieut. Leona Jackson is shown pinning an "E" lapel emblem on a Sharples employee while President Philip T. Sharples looks on approvingly.

Sharples Chemicals, Inc.

At an impressive ceremony, attended by high-ranking army and navy officers, prominent civilians, and several hundred employees, the Army-Navy "E" Award was presented to Sharples Chemicals, Inc., on Jan. 27 at their plant at Wyandotte, Mich.

Archie D. Swift, president of Central-Penn National Bank of Philadelphia, officiated as master of ceremonies, introducing the speakers and explaining the significance of the award. Presentation of the "E" emblem was made by Lt. Colonel William O. Brooks, Chemical Warfare Service, U. S. Army. Philip T. Sharples, president of Sharples Chemicals, Inc., accepted the award for the company and made a stirring address to the employees and guests.

Presentation of the Army-Navy "E" insignia was made by Commander A. F. Duernberger, U. S. Navy, and the acceptance speech for Sharples employees was made by Edward McCormick of Wyandotte.

One of the most impressive addresses was made by Lieut. Leona Jackson, U. S. Navy Nurse Corps, who had been held prisoner by the Japanese for seven months. At the conclusion of the ceremonies, Lieut. Jackson personally presented Sharples employees with the "E" lapel emblem, as they filed across the speakers' rostrum.

■ ■

Star Added to "E" Award

The Army-Navy "E" Star Burgee for "continued production excellence" was awarded the Worthington Pump & Machinery Corp., Harrison, N. J., on Jan. 22 in the presence of 4000 employees, company officials and representatives of the armed services.

The Star Burgee was a renewal of the navy "E" originally awarded the firm in June, 1942. Hobart C. Ramsey, vice president in charge of operations, received the Star Burgees on behalf of the company. Highlights of the ceremony were talks given by a navy gunner's mate and a marine corporal.

For Digging the 1,000s of Miles of New Oil-Gas-Gasoline Pipeline required in 1943 to Meet War Demands
"CLEVELANDS" Meet Fully All Requirements
It is predicted that 10,000 miles of Pipeline must be built in 1943 to meet War Emergencies.
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"CLEVELANDS" Save More . . . Because they Do More

Gas Heater Provides Drying System

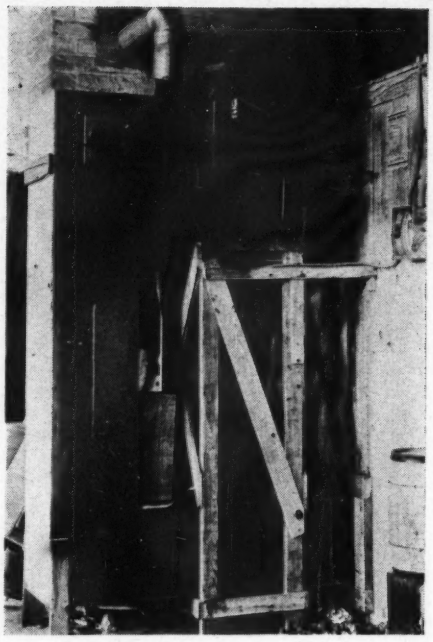
AN instance in which a heating engineer was enabled to save a client a great deal of operating costs by a bit of ingenuity in solving a common problem is illustrated by the recent installation of a gas-fired "drying room" in the factory of the Bienville Furniture Co., New Orleans, La.

Bienville Furniture Co., whose principal production is simulated-fine-furniture made by stenciling of mahogany and fine walnut grain on low-cost hardwoods, was for several years troubled by improper results in the drying of freshly-processed furniture by standard means. This was formerly done simply by setting out furniture as it came from the spraying room on a space on the second floor of the building, and waiting four hours for it to dry. During this time, dust and improper finish drying meant that much of the furniture needed further treatment to make it saleable.

Unwilling to risk the cost of a baking room, the furniture company management queried Frank Fisher Engineering Co., New Orleans heating firm, for a possible solution to the problem. The result was the inexpensive and efficient new dry-heat system shown in the accompanying illustration.

The job consists of one 75,000 B.t.u. blower fan type gas heater, circulating 7500 c.f.m. of heated dehumidified air through a 14x20 ft. insulated room by means of an over-and-under duct constructed of heavy plywood. The air is dehumidified by pans of silica gel which take out enough moisture that there is little possibility of the furniture being dried blistering from moisture.

As shown, the heater was affixed near the ceiling of the second floor factory room, and the duct and drying room built around it. Between the heater face and the wall of the drying room is a galvanized metal duct, for safety in conducting the hot current from the heater into the room. Otherwise ducts are simply plywood—safe because the arrangement has a temperature-limitation control which provides a maximum temperature of 110°. There is also an automatic humidity control. Ducts are 12x22 in.



The 75,000 Btu. blower fan gas heater which circulates 7500 cfm. of heated dehumidified air through an insulated room by means of an over-and-under duct constructed of heavy plywood.

Operating six hours daily, this arrangement has cut the total drying time required for furniture moving through assembly, checking and painting to the room from four hours to only half an hour, with elimination of dust and uneven drying danger. Furniture moving into the room is left half an hour, brushed off, and packed when it leaves the drying room for the market. Less than 2% of the former loss encountered through poor finish has been indicated in one month of use.

Slots in the wall of the drying room opposite the heater provide for ample leakage, and the rest of the warmed air is circulated. L. M. Tognoni, heating engineer of the New Orleans Public Service Co., Inc., was called in to supervise the installation, which cost less than half the expense required for a standard finish baking room.

■ ■

Wartime Necessity of Scrap

The Business Press Industrial Scrap Committee has prepared a booklet, "Primer of Industrial Scrap," the purpose of which is to further educate industry to back up the war effort by the segregation and sale of manufactured and dormant scrap.

Within the five chapters of the booklet such topics as "The Why and Wherefore of Scrap," "Plant Salvage—Good Business," "Scrap Definitions," "Government Ceilings and Dealer Scrap Prices," and "Scrap Statistics" are covered.

The keynote of the booklet is "Industry must not only furnish the sinews of war in planes, guns, tanks and ships but it must also increase the flow of one of our most essential raw materials—SCRAP!"

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Four New Appointments To Gas Institute Staff

WITH the increased demands of war research calling for additional personnel, the Institute of Gas Technology, Chicago, has added four men to its staff in the past month, it has been announced by Harold Vagtborg, director.

The four new staff members are Dr. Samuel William Martin, George Jay Verbeck, Cornel Wohlberg and Vito Charles Lazzaro.

Dr. Martin comes to the Gas Institute from the National Lead Co., Titanium Division, where he was a research physical chemist. For a time he taught physical chemistry at Yale University where he received his Doctor of Philosophy degree.

Dr. Martin received his Bachelor of Arts degree from Williams College and did post doctorate work at Princeton University. His appointment was effective Feb. 1.

Mr. Verbeck, formerly a research chemist with Abbott Laboratories and the Portland Cement Association, joined the staff Jan. 11. His undergraduate work was done at Lawrence College, and he received his Master of Science degree from the University of Chicago. He was a laboratory assistant at Lawrence for two years.

Mr. Wohlberg did analytical and laboratory work at the National Lead Company, Titanium Division, from 1930 to 1935. For the next three years he did research work for that company. Also for a time he was research chemist acting in charge of the laboratory at the International Tailoring Company, Division of Reiss Manufacturing Corp. He came to the Institute Feb. 1.

Mr. Wohlberg is a graduate of Polytechnic Institute of Brooklyn with a Bachelor of Science degree.

Mr. Lazzaro, prior to coming to the Gas Institute on Feb. 8, did research work for the West Virginia Pulp and Paper Company for five years. He also formerly served as laboratory instructor in qualitative analysis and inorganic chemistry at Tufts College where he received his Bachelor of Science degree.

■ ■

Railroad Commission Approves San Diego Rates

California Railroad Commission, through President Franck Havenner, announced its approval of the natural gas and electric rate reductions for the city and county of San Diego aggregating $262,900 annually and effective Feb. 15.

Savings of $158,700 to general service gas customers represents the largest total single reduction. Industrial and military users of gas will benefit from a reduction of some $42,500.

Total electric rate reductions will amount to $61,700, with $59,000 of this amount being saved by military establishments and the balance of $2700 by shipbuilders.

■ ■

Institute Pledges Maximum Service to Gas Industry

A two-point program to make maximum use of critical scientific manpower in the gas industry technical training program will go into effect immediately at the Institute of Gas Technology, according to an announcement by Harold Vagtborg, the Institute's director.

The program concerns the new selectees for fellowships at the Gas Institute, which is located at and affiliated with Illinois Institute of Technology in Chicago.

These topnotch technical students are scheduled to begin their regular training program at the Gas Institute in June, but because so many colleges are operating under war-time accelerated programs, graduation dates of the new fellows vary considerably. At least two of the new Gas Institute appointees will complete their regular college training in March.

So provision is being made under the new program to make maximum use of these extra man hours. The new fellows will be assigned to Gas Institute war research projects as rapidly as they complete their college training and will work at this activity until their regular training program starts.

Then, in the second stage of the program, these men will commence their specialized training by being assigned to actual practice in the gas industry.

Radio Again Proves Value During Outage in Texas

Another evidence of the importance of communication systems in times of emergency occurred in Tyler, Texas (population 28,000) the middle of January when a severe gas shortage resulted from a leak in the 8-in. natural gas line that supplies the town. A grass fire ignited the gas from the leak; the resultant heat caused the pipe to crack.

The radio station announced at frequent intervals that gas service would be cut off completely at a certain hour to allow workmen to repair the damaged line, property of the United Gas Pipeline Co., and consumers were warned to cut off pilots in stoves and heaters and to turn off gas jets and meters.

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PART 3. PRODUCTION OF LP-GAS
Chapter 1: Natural Gasoline Plants, Recycling Plants, Oil Refineries.

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Chapter 3: Domestic Applications.
Chapter 4: Commercial Applications.
Chapter 5: Industrial Applications.
Chapter 6: Enrichment, Peak Load and Stand-by Uses.
Chapter 7: A Fuel for Internal Combustion Engines.

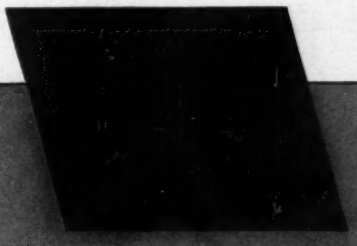
CHAPTER 7. REGULATIONS
Section 1: N. B. F. U. Pamphlet No. 58.
Section 2: Motor Carrier Regulations.
Section 3: Freight Regulations.
Section 4: Unloading Tank Cars.
Section 5: Marine Regulations.

PART 8. APPENDIX
Section 1: Products Liability Insurance.
Section 2: Handy Tables for Field Use.
Section 3: Bibliography.
Section 4: Glossary of Terms.

CATALOGUE SECTION

A comprehensive presentation of LP-Gas appliances and equipment by the manufacturers of the LP-Gas Industry's best known products.

We pay postage on orders accompanied by check or money order. In California add 3% for sales tax. In Canada add 10% for excise tax.



GAS
1709 W. 8th St. Los Angeles, Calif.

Air Conditioning Preserves Rare Books

By BERT MERRILL

GAS absorption air conditioning won further acceptance in the South when a 264-ton system was installed recently by the Airflow Co. of New Orleans, La., with the cooperation of New Orleans Public Service, Inc., in the new $700,000 Howard Tilton Memorial Library of Tulane University in New Orleans. The system, second to be installed in a one-year period in New Orleans, is reportedly the only completely air conditioned library building in the country, and was "tailored" to serve a combination of unusual uses.

First, the system's chief responsibility is maintenance of proper humidity and temperature for prolonging the life of a valuable collection of old manuscripts and rare books collected by the university during the past 50 years. These are kept in the Rare Books room of the new library building, and in several sections of the bookstack section which contains 500,000 books of every classification—all subjected to a cool, dehumidified atmosphere of 80° with 60% relative humidity 24 hours a day the year around.

Second, the system provides comfort cooling for the entire building, including a number of executive offices, professors' studies, auditorium and lecture room, library reading and reference rooms, and a film studio.

Designed by New Orleans Public Service air conditioning engineers, the system consists of two banks of Williams Air-O-Matic absorption units, each containing four 38-ton units. These provide 106 tons of cooling capacity for the bookstack section (approximately half the building) and 126 tons for the public rooms. To guard against the high-humidity summer heat of the city attacking the manuscripts, the two banks of units are supplied with individual manifolds, interchangeably interconnected with 4-in. insulated pipe so that either system can utilize the chilled water of the other for its cooling job. With this flexibility, should the bookstack refrigeration fail, it will be possible to turn a valve and operate on the cooling capacity of the remaining bank.

With economy of operation a major consideration, the system distributes cooled air to zones in the building, rather than pumping cold water over long distances. Chilled water at 46½° is pumped from the manifolds to the third floor, where two air washers with a combined capacity of 68,000 c. f. m. wash, filter and cool circulated air. It returns to the manifolds at 51½°, losing only 5° in the process. Each washer handles 640 g. p. m., the bookstack unit delivering 27,000 c. f. m. with 5850 c. f. m. fresh air, the public-area unit delivering 41,000 c. f. m. with 7000 c. f. m. fresh air. Amount of fresh air receivable is flexibly controlled by a manual damper intake.

The refrigerating absorption units are cooled by a forced draft cooling tower atop a rear building, which pumps 1100 g. p. m. through the two Williams batteries, 640 g. p. m. each. All cooling capacity is larger than required, for guarding against peak heat loads and heavy building use.

Cooled air from the washers is supplied through concealed insulated ducts to eight small plenum chambers equipped with thermostats and blowers in the eight main zones of the Tulane library. Each unit handles a specific cooling job, and is supplied with a supply and return air duct, the thermostat being located in the return air duct. Cubic feet per minute varies from 5000 to 15,000, dependent upon the usage of the zone concerned. Any number can be operated simultaneously, those in the bookstack section carrying the heaviest load per unit. The fact that the building is lighted throughout with fluorescent, cold-life tubes helps to keep down cooling expense, removing the common lighting-heat load.

Eight 38-ton absorption units keep the Howard Tilton Memorial Library at Tulane University air conditioned the year around. Designed by New Orleans Public Service air conditioning engineers, the plant has as a principal function the continuous maintenance of an 80° atmosphere with 60% relative humidity in the library's rare book chambers.

★★ DOING THEIR Duty

KCO

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AUTOMATIC GAS SHUT OFF AND RELIEF VALVES

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Subsidiary of the Welsbach Engineering and Management Corporation

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Reliable, efficient service is a Reynolds tradition. Regardless of heavy war demands, which have priority in capital letters, we are making every effort to maintain the tradition of good, reliable service.

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ABSTRACTS

N.G.A.A. Tentative Standard Method for Calculation of High Pressure Gas Measurement—Adopted December, 1942, by the Natural Gasoline Association of America, 922 Kennedy Bldg., Tulsa, Okla. The metering of natural gases through orifices under high pressure creates problems of two types. First, the calculation of the quantity of gas flowing through the meter requires the density of the gas. This usually involves a choice of the correct compressibility factor to account for its deviation from ideal gas laws. Second, the reduction in pressure accompanying flow of a natural gas at high pressure may cause liquid to be present from retrograde condensation. This liquid may interfere with uniform meter operation and must be included in the density of the gas flowing.

Because of the very nature of the subject covered in this publication, the material is not presented in the formalized style common to most technical standards. Instead, it appears as an informal discussion of procedure, together with its supporting data and reference bibliography.

Part 1 presents a tentative standard for obtaining orifice correction factors to account for the deviation of gases from ideal gas laws at high pressure. This factor has been combined with the gravity and temperature factors to simplify the calculation of the meter quantity since both the gravity and temperature are required to determine the compressibility factor.

Part 2 presents the details of an investigation of the reliability of the compressibility factor method for gas density calculations and compares the experimental and calculated factors on a number of natural gases.

Capital Flow and Capital Formation in the Petroleum Industry, 1934-1941—By Joseph E. Pogue and Frederick G. Coqueron, department of petroleum economics, the Chase National Bank. The 30 companies covered in the survey produced in 1941 52.5% of the domestic output of crude petroleum and ran to stills 79.9% of the nation's total crude oil processed; and in 1938 they sold 85.1% of the gasoline consumed in the United States.

"The outstanding conclusion to be drawn from this study is that the petroleum industry in the eight-year period preceding our entry into the present World War was financially self-reliant, providing for its growth practically entirely from capital charges and net profits," said Mr. Pogue.

Temperatures of Natural-Gas Pipe Lines and Seasonal Variations of Underground Temperatures—W. M. Deaton and E. M. Frost, Jr. United States Department of the Interior, Bureau of Mines, Report of Investigations, R. I. 3590. A pipe-line-temperature survey was made along a 22-in. natural-gas pipe line originating near Amarillo, Texas, and extending northwestward through New Mexico into Colorado. Some data were also collected along a 16-in. line extending southward from Amarillo. Temperatures were taken of gas flowing in the line, the pipe line wall, and atmosphere, at numerous locations along the pipe line route over a period of approximately four years. Instruments are described and results outlined in considerable detail. It is shown that the temperature of the lines and of the gas therein is essentially the same as the temperature of the ground at a depth corresponding to that of the center of the pipe, unless there are disturbing influences such as compressor stations, river crossings, or abrupt changes in the depth of the pipe line. Changes in the temperature of the buried pipe lines may lag behind changes in atmospheric temperature by several days, depending on the depth of the line. The lowest temperatures were reached at depths of three to 10 feet, during February or March, and the highest temperatures during August or September of last year.

An Analysis of Heating Industrial Buildings With Gas—Bulletin of the A. G. A. Committee on Industrial Space Heating, James E. Dare, chairman. The six major objectives as analyzed in this bulletin indicate that: (1) This load is very desirable and of permanent nature. (2) It is an aid in the war production program, especially in areas where no gas limitation orders apply. (3) There is a present tremendous demand for this type of load. (3) There will be a large future market for this type of load. (5) To obtain this load a careful analysis of the competitive conditions affecting sales must be made. (6) Conservation of critical metals can be attained through the installation of gas fired unit heaters instead of competitive fuel equipment. The data, illustrations, suggestions, recommendations and general information contained is submitted for the purpose of aiding the gas industry in obtaining its proper share of the industrial space heating load.

The War and Secondary Recovery—R. C. Earlougher and L. M. Arnold, partners in the Geologic Standards Co., Tulsa, Okla. Discusses methods of increasing production from what are known in the industry as the "stripper" wells. There are many thousands of these veteran oil wells whose production ranges from a few gallons to a few barrels daily. Underlying such wells are reserves of many millions of barrels, much of it recoverable by the application of known methods, but at costs generally in excess of the present price of crude oil. Because a large percentage of stripper properties are producing from the shallower sands, it is possible, said the authors, to use large quantities of second-hand pipe in programs of obtaining additional recovery of oil, such as repressuring with air or gas and flooding oil sands with water.

Refrigerating Data Book—Published by the American Society of Refrigerating Engineers. Vols. 1 and 2 of the current fourth edition may be secured from the publishers, 50 West 40th St., New York, N. Y. Price: $4 for each volume.

Second Oil Pipeline To East Coast Scheduled

PETROLEUM Administrator for War Harold L. Ickes has announced that work is scheduled to start in March on the construction of a second big oil pipeline to boost movement to the east coast—an 836-mile, 20-in. conduit designed to deliver 235,000 bbls. of petroleum products daily from Texas to tank car loading points in Illinois and Indiana.

If work starts and proceeds on schedule, and if there are no interruptions to the flow of construction materials, the line can be completed on or about Sept. 1.

Upon completion of the details, the Defense Plant Corp., a subsidiary of the Reconstruction Finance Corp., will be requested to finance the project, which will be built for the government by War Emergency Pipelines, Inc. The estimated cost is $44,000,000.

War Emergency Pipelines, Inc., is the company organized by the petroleum industry to construct the 24-in. pipeline now being built from Longview, Texas, to the New York-Philadelphia refining area.

Plans call for the use of 20-in. seamless steel pipe on the main 836-mile section of the pipeline, but welded pipe will be installed if deliveries of seamless tube cannot be secured in adequate quantity to maintain uninterrupted construction.

Eighty-three miles of 16-in. pipe will be laid as a feed from Houston to Beaumont and 32 miles of 10¾-in. pipe will be laid as another feeder line from Port Arthur to Beaumont. Thirty-four miles of second-hand 8⅝-in. pipe will be laid as refinery tie-ins near Baytown and Texas City.

Sixteen pumping stations equipped with a total of 44 motors and pumps capable of producing 55,000 hp. will be installed to maintain the 235,000-bbl.-a-day flow between Houston and Beaumont, Texas, and Seymour, Ind.

■ ■

Construction Under Way on Section of Emergency Line

Construction work started Feb. 15, on an additional section of the 857-mile Illinois-East Coast extension of the 24-in. War Emergency Pipeline.

Pipeline construction crews "set in" in the mountainous region near Chambersburg, Penn., on one of the 20 working spreads into which the 857-mile construction job has been divided.

Full-scale construction work is now under way along more than 200 miles of the Eastern Pennsylvania and Western New Jersey route of the "big inch." Additional construction is progressing rapidly on similar sections of the War Emergency Pipeline in Illinois, Indiana and Ohio.

Severe winter conditions have hampered construction work frequently since operations were started early in January, but the pipeliners are meeting the pace required to complete the eastern extension of the pipeline by June.

■ ■

Joint Pipelines May Bring Panhandle Gas to Ohio

Ohio and West Virginia wells will be aided in supplying heavy wartime demands in the industrial areas of Cleveland, Youngstown and Akron by natural gas from the Texas Panhandle, if WPB approval is given joint plans made by the East Ohio Gas Co. and the Panhandle Eastern Pipeline Co.

According to the agreement between the companies, East Ohio will construct a 20-in. pipeline from its Brush farm valve station between Cleveland and Akron to Maunee, where it will tap Panhandle's 24-in. line running to Detroit. Deliveries up to 50,000,000 cu. ft. a day will approximate 30% of East Ohio's present daily average sales. Contingent on Panhandle's being able to deliver, East Ohio can raise the ante an additional 50,000,000 cu. ft. daily.

East Ohio's 120-mile line, as well as the filling in of gaps in the second loop of Panhandle's dual 24-in. line, will be included in construction estimated to cost $2,250,000. The job will take about 22,500 tons of steel.

Five years is the term of the contract between East Ohio and Panhandle, with the understanding that East Ohio will pay 27¾c per 1000 cu. ft. delivered on the basis of 100% per load. By a six-months notice, either party can terminate the agreement at the end of five years.

■ ■

Panhandle Eastern Completes Pipeline to Michigan Area

Panhandle Eastern Pipeline Co., Kansas City, Mo., has recently completed its line through central Indiana and the section through Michigan from Riga to Saginaw with a lateral line to Birmingham, just north of Detroit. The project involved a total of 165 miles of 20-in., 18-in., 16-in. and 12-in. pipe. The line provides gas service to cities on the Consumers Power System. I. C. Little, Dallas, is the contractor.

Gas is Ammunition
don't waste it
save gas with Carboseal Anti-Leak

YOU can prevent the loss of a vital war material — gas — by using CARBOSEAL Anti-Leak to stop the leaks in the bell-and-spigot joints of dry-gas systems. CARBOSEAL Anti-Leak is a liquid that penetrates the cells of the hemp and jute fibres in the joint packing and causes them to swell approximately 44 per cent in volume, thereby sealing leaks.

CARBOSEAL Anti-Leak is especially recommended now as a gas-saver because . . . only a small crew is needed to apply it . . . critical materials are not needed . . . the cost of the treatment is low, averaging about 50 cents per joint . . . and excavation and repaving are practically eliminated.

CARBOSEAL Anti-Leak works. Reports show that joints in mains treated seven years ago are still tight. The Table of Leakage Reduction, compiled from hundreds of test results on file, indicates results typical of general field experience.

Over 250 gas companies now use CARBOSEAL Anti-Leak in their routine maintenance programs.

For further information on the uses of the Anti-Leak and methods for applying it, write for the book, "Correcting Leakage in Gas Distribution Systems with CARBOSEAL Anti-Leak."

TABLE OF LEAKAGE REDUCTION

Diameter of Main—Inches	Length of Main—Feet	Percentage Leak Reduction
8	620	100
6	582	95
6	92	100
4	1,200	100
4	1,700	91
3	618	100
3 equiv.	43,800	60

CARBIDE AND CARBON CHEMICALS CORPORATION

Unit of Union Carbide and Carbon Corporation

30 East 42nd Street UCC New York, N. Y.

The word "Carboseal" is a registered trade-mark of Carbide and Carbon Chemicals Corporation.

PRODUCERS OF SYNTHETIC ORGANIC CHEMICALS

Cabeza Creek

Continental Oil Co. and Atlantic Refining Co.'s 1 J. E. Pettus, in Goliad County, Texas, is reported to be making 19,000,000 cu. ft. of gas on open flow from perforations at 7743-7760 ft., accompanied by a spray of distillate. The well, drilled by Fain Drilling Co. and taken over for completion by Continental and Atlantic, has been shut in. The new field thus opened has been named Cabeza Creek.

WANTED

Gas Holders, Pumps, Condensers, Coolers, Tanks, Boilers, Buildings, Pipe, etc.

Jos. Greenspon's Son Pipe Corp.

National Stock Yards
(St. Clair County), Illinois

GEORGE A. BURRELL

Consulting Gas Engineer

Suite 1909
20 Pine St. New York City

1936-42 5th Ave. Pittsburgh, Pa.

WANTED GAS HOLDERS

4 to 6; 30,000 cu. ft. or equivalent. 2 to 4; 50,000 or 60,000 cu. ft. or equivalent. Also 1 or 2 larger sizes. Wire general condition, specifications and price as is or dismantled and loaded.

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SONKEN-GALAMBA SUPPLY COMPANY

TULSA, - - OKLAHOMA

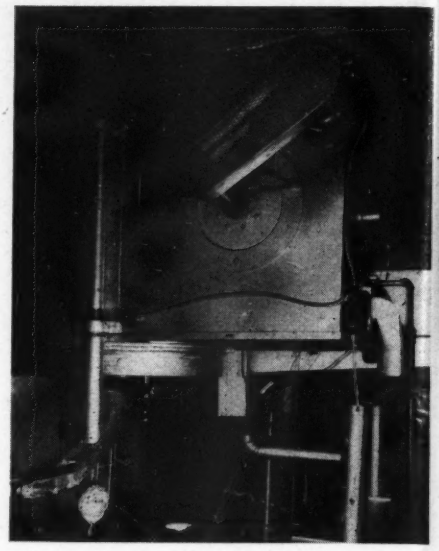
Intertype Corp. Uses Gas Furnace

THE Brooklyn Union Gas Co. recently reported the installation of a new type of gas-fired air-drawing, tempering and stress-relieving furnace in the Brooklyn, N. Y., plant of the Intertype Corp., whose type-setting machines are widely used. The corporation currently is engaged in filling a large order for small accurately-machined gears, used in aviation starting motors.

This order created a need for a new furnace to relieve stresses in the gears caused by the cutting operations. On the recommendations of the Brooklyn utility, the corporation decided to install a new type of furnace manufactured by the Despatch Oven Co. of Minneapolis.

The chief advantage of the new equipment is that it can maintain a uniform temperature throughout the work load and do so at much higher temperatures than was possible formerly. Within its working range of from 300° to 1250° F., the furnace can maintain any desired temperature with a variation in the work load of not more than 5° plus or minus. The conviction principle of forced air circulation is used.

In addition to relieving stresses in the aviation gears, the furnace is being used to relieve stresses in miscellaneous small parts which formerly were treated in an electric furnace. It is estimated that the new equipment will use about 750,000 cu. ft. of gas annually. The furnace is equipped with automatic ignition and temperature controls.



Here is a view of the gas-fired, air-drawing, tempering and stress-relieving furnace recently installed by the Intertype Corp. in Brooklyn, N. Y. The view shows the basket elevated, ready to be loaded. The furnace will handle 400 lbs. of work an hour.

New Drillings in Texas Panhandle Field Prohibited

The use of material for the drilling of new natural gas wells in the Texas Panhandle field was banned by Petroleum Administrative Order No. 9 issued by the Office of Petroleum Administrator for War Harold L. Ickes.

Effective immediately, the order prohibits the use of any materials to drill, complete or provide additions to any well in any discovered or undiscovered natural gas field in Carson, Collingsworth, Gray, Hansfield, Hartley, Hutchinson, Moore, Potter, Sherman or Wheeler counties, Texas.

PAW may issue exceptions to the present ban on the use of materials in the field. Applications to use material to drill, complete or provide additions to any well must be made by filing a letter in quadruplicate or by sending a telegram to the Director of the Natural Gas and Gasoline Division, Petroleum Administration for War, Interior Bldg., Washington, D. C., Ref. PAO No. 9.

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Defense Plant Corporation To Purchase Texas Pipeline

An agreement has been made by the Defense Plant Corp., a government agency, to purchase a natural gas transmission line owned by the Houston Gulf Gas Co. which will be used to supply part of the requirements for oil to be carried through the 24-in. line from Longview, Texas, to Norris City, Ill. The cost of the line, which extends 145 miles from Refugio to Pierce Junction in Texas, will be approximately $4,625,000. The line will connect oil pipelines between Corpus Christi and Longview, Texas.

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Reprieve Granted

New England Public Service Co.'s application for an additional year in which to comply with the Securities and Exchange Commission's "death sentence" has been granted. Originally ordered to change its present capitalization to one class of common stock or liquidate its affairs and distribute its assets to security holders, the company has been given an extension of time until May 2, 1943.

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East Ohio Gas Company's Status Investigated

Hearing was set for March 3 in Cleveland, by the Federal Power Commission, for the purpose of determining whether East Ohio Gas Co. is a natural gas company within the meaning of the Natural Gas Act. Also to be investigated is the cost of natural gas service rendered by the company.

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New Louisiana Pool Tapped

Discovery of a new gas and condensate pool in St. Landry Parish, Louisiana, has been made by the Gulf Refining Co. Its wildcat Haas-Hirsch No. 1-E, located at Krotz Springs, is now making gas and condensate from a depth of about 10,000 ft.